

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 IHC 5,8h  
2. Edition

VA 6/100 H 1250 CR 87  
0 460 306 193

supersedes 8.74  
company: IHC  
engine: D 358

Supplement plunger lift 1.0 mm referenced  
to outlet "A".

Pre-stroke setting mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	900	3,1-4,1 mm		
1 2 Supply pump pressure	900	4,6-5,1 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	800	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	270	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1300	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	370-520 (340-550)	600	900	1050	1070-1220
	mm	0,7-1,7 (0,4-2,1)	(2,8-4,4)	4,2-5,2 (3,9-5,5)	5,2-5,9 (4,9-6,2)	
2 2 Supply pump	rev/min	200		900		1250
	kp/cm <sup>2</sup>	1,1-1,6 (0,9-1,8)		(4,4-5,3)	5,7-6,2 (5,5-6,4)	
Overflow delivery	rev/min	500				1250
	cm <sup>3</sup> /10 s	55-100 (40-110)				55-100 (40-110)

### 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1380 (1310-1400)	0	
		1300	(15,0-25,0)	
		1200-1240	Start	
		1180	62,5-65,5 (61,5-66,5)	
		800	(67,5-70,5)	
		500	67,0-70,0 (66,0-71,0)	
	Stop	1250	0	
Idle stop	Full	360-410 (340-430)	0	
		270	(11,0-19,0)	
	Start	100	mind. 90,0	
End stop		220-320		

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha$ = $55 \pm 8^\circ$ $\beta$ = $30 \pm 8^\circ$ $\gamma$ = $60 \pm 8^\circ$ $\delta$	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 DEE 2,5e 2

1. Edition

VA 3/100 H 1000 BR 28-2

supersedes

company

John Deere

engine

493 B

Setting of pointer with plunger lift 1.72 mm referenced to outlet "A" in line with TDC position of corresponding engine cylinder

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	600	6,9-7,9 mm		
1 2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1060	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	100-260 (70-290)	600	790-940
	mm	Start	(6,6-8,2)	9,7-10,4 (9,4-10,7)
		100	600	1000
2 2 Supply pump	rev/min	1,7-2,2 (1,5-2,4)	(4,9-5,8)	6,2-6,7 (6,0-6,9)
	kp/cm <sup>2</sup>	500	1000	
Overflow delivery	rev/min	mind. 25,0	55-125 (40-140)	
	cm <sup>3</sup> /10 s			

## 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1210 (1100-1230) 1160 1060 1000 500 100	0 max. 3,0 (25,0-35,0) (48,0-50,0) 41,5-45,5 (40,5-46,5) mind. 32,5	
	Stop	1000	0	
Idle stop	Full	470-530 (450-550) 400	0 (8,0-16,0)	
	Start	--	--	
End stop				

Testoil-ISO 4113

**BOSCH**

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung  
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Angle to the stop-plate		Pre-setting dimensions	
Pump	$= 25 \pm 4^\circ$	Pump	
$\alpha$	$= 30 \pm 8^\circ$	Dimension IV	3,0 mm
$\beta$	$= 30 \pm 8^\circ$	Dimension V	- mm
$\gamma$	$= 60 \pm 8^\circ$	Dimension I	7,0 mm
$\delta$		Dimension II	10,5 mm
		Dimension III	26,8 mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 2,3d 1

1. Edition

En

VA 3/100 H 1200 BR 52-3

supersedes

company **Hanomag**  
engine **D 131**

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting **0,3<sub>mm</sub>**

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,5-4,5 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	46,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	28,5-36,5 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	520-670(490-700)	900	1000-1150
	mm	Start	(3,2-4,8)	5,7-6,4(5,4-6,7)
		100	900	1300
2.2 Supply pump	rev/min	1,4-1,9(1,2-2,1)	(4,7-5,6)	6,1-6,6(5,9-6,8)
	kp/cm <sup>2</sup>	500	1000	
Overflow delivery	rev/min	mind. 25	55-125(40-140)	
	cm <sup>3</sup> /10 s			

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1450 (1370-1470)	0	
		1350	(27,5-37,5)	
		1250	48,0-51,0 (47,0-52,0)	
		1100	(48,0-50,0)	
		500	44,0-47,5 (43,5-48,5)	
	Stop	1300	0	
Idle stop	Full	380-430 (360-450)	0	
		300	(9,0-17,0)	
		100	mind.65,0	
End stop	Start	mind.150		

**BOSCH**

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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A5

A5

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 5,5 mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3c

3. Edition

VA 3/100 H 1500 BR 129-4  
0 460 303 088

supersedes 6.70  
company Hanomag  
engine D 132 W

Setting of the pointer at a stroke of 1,12 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device (adv.)	1000	6,0-7,0 mm		
1.2 Supply pump pressure	1000	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	58,5-59,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 60,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	510-640(480-670)	1000	1260-1400
	mm	Start	(5,7-7,3)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	0,7-1,2(0,5-1,4)	(4,5-5,4)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1500	
	cm <sup>3</sup> /10 s	mind. 25	85-155(70-170)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1610-1660 (1590-1680)	0	
		1580	(15,0-25,0)	
		1450	59,0-62,0 (58,0-63,0)	
		1200	(58,0-60,0)	
		500	53,0-56,0 (52,0-57,0)	
	Stop	1500	0	
Idle stop	Full	340-440 (360-460)	0	
		300	(9,0-14,0)	
		100	mind. 60,0	
End stop	Start	300-550		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,5 mm BMP 161/32</p> <p>Dimension V = -- mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1 e 1

1. Edition

En

VA 6/100 H 1300 BR 54-2

supersedes

company

engine

Hanomag

D 161 R-75 PS

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,4-4,4 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1390	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	520-670 (490-700)	1000	1120-1240
	mm	Start	(3,1-4,7)	4,7-5,4 (4,4-5,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(5,1-6,0)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500)	0	
		1390	(25,0-35,0)	
		1300	46,5-49,5 (45,5-50,5)	
		1100	(47,0-49,0)	
		500	43,5-46,5 (42,5-47,5)	
	Stop	1300	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(11,0-19,0)	
		100	mind. 65,0	
End stop	Start	500	mind. 25,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 6,0 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

**46**

WPP 001/4 HAN 3,1e

2. Edition

VA 4/100 H 1300 BR 53-2

supersedes 6.69  
company: Hanomag  
engine: D 142 K

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720 (530-750)	1100	1160-1300
	mm	Start	(4,7-6,3)	6,7-7,4 (6,4-7,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,7-1,2 (0,5-1,4)	(4,6-5,5)	5,3-5,8 (5,1-6,0)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1490 (1410-1510)	0	
		1350	(30,0-40,0)	
		1250	57,5-60,0 (56,5-61,5)	
		1100	(56,5-58,5)	
		500	53,5-56,5 (52,5-57,5)	
	Stop	1300	0	
Idle stop	Full	450-510 (430-530)	0	
		350	(9,0-17,0)	
		100	mind. 75,0	
End stop	Start	500	mind. 25,0	
		mind. 150		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 4,0 mm Dimension V = - mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1b

3. Edition

En

VA 4/100 H 1300 BR 137

0 460 304 075

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0.1 mm

supersedes 4.69  
company Hanomag  
engine D 141 R

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720 (530-750)	1100	1160-1300
	mm	Start	(4,7-6,3)	6,7-7,4 (6,4-7,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,5-1,0 (0,3-1,2)	(4,6-5,5)	5,4-5,9 (5,2-6,1)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1480-1540 (1460-1560)	0	
		1400	(21,0-29,0)	
		1300	47,5-50,5 (46,5-51,5)	
		1100	(49,0-51,0)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1300	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
		100	mind.75,0	
End stop	Start	300-550		

Angle to the stop-plate	Pre-setting Dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = - 11mm Dimension V = - 11mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 3,1b 1

1. Edition

VA 4/100 H 1500 BR 137-2  
0 460 304 095

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes  
company: Hanomag  
D 142 W  
engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	630-770 (610-790)	1100	1350-1470
	mm	Start	(4,7-6,3)	8,7-9,4 (8,4-9,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	0,6-1,1 (0,4-1,3)	(4,6-5,5)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind. 25		85-125 (70-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1710 (1630-1730)	0	
		1600	(20,0-30,0)	
		1450	52,5-55,5 (51,5-56,5)	
		1200	(54,0-56,0)	
		600	52,0-55,0 (51,0-56,0)	
	Stop	1500	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
		100	mind. 75,0	
End stop	Start	300-550		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\epsilon = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = - mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 4,2a

3. Edition

En

VA 6/100 H 1300 BR 54

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes 4.69  
company Hanomag  
engine D 161 R

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,4-4,4 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	41,5-42,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1360	21,0-29,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	520-670(490-700)	1000	1220-1240
	mm	Start	(3,1-4,7)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	100	1000	1300
	kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,4-5,3)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450 (1380-1470)	0	
		1360	(20,0-30,0)	
		1280	41,5-44,5 (40,5-45,5)	
		1100	(41,0-43,0)	
		500	36,5-39,5 (35,5-40,5)	
	Stop	1300	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(9,0-17,0)	
		100	mind.65,0	
End stop	Start	500	max. 30,0	

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 5,5 \text{ mm}$
$\beta$	$= 40 \pm 8^\circ$	Dimension V	$= - \text{ mm}$
$\gamma$	$= 30 - 8^\circ$	Dimension I	**
$\delta$	$= 60 \pm 8^\circ$	Dimension II	**

\* \* According to the wear-parts list (BR)

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3 b

2. Edition

En

VA 3/1000 H 1300 BR 52

supersedes 4.69  
company Hanomag  
engine D 131

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,3-4,3 mm		
1.2 Supply pump pressure	1100	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	25,0-33,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	750-850 (720-880)	1100	1100-1200
	mm	Start	(3,0-4,6)	3,7-4,4 (3,4-4,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,6-1,1 (0,4-1,3)	(4,8-5,7)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500)	0	
		1380	(24,0-34,0)	
		1300	51,0-54,0 (50,0-55,0)	
		1000	(51,0-53,0)	
		600	52,0-55,0 (51,0-56,0)	
	Stop	1300	0	
Idle stop	Full	420-480 (400-500)	0	
		300	(10,0-18,0)	
		100	mind.65,0	
End stop	Start	500	max. 45,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 7,5 mm (s.a.BMP)</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 4,2a 1

1. Edition

En

VA 6/100 H 1300 BR 54-1

supersedes

company:

engine:

Hanomag  
D 162 R

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,0-7,0 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	530-680(500-710)	1100	1180-1300
	mm	Start	(5,7-7,3)	7,7-8,4(7,4-8,7)
2.2 Supply pump	rev/min	100	1100	1130
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,1-6,0)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min			
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1470 (1410-1490)	0	
		1380	(27,0-37,0)	
		1280	53,5-56,5 (52,5-57,5)	
		1100	(53,5-55,5)	
		500	51,0-55,0 (50,0-56,0)	
	Stop	1300	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(8,0-16,0)	
		100	mind.65,0	
End stop	Start	500	max.45,0	

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 6,0 \text{ mm (s.a.BMP)}$
$\beta$	$= 40 \pm 8^\circ$	Dimension V	$= - \text{ mm}$
$\gamma$	$= 30 \pm 8^\circ$	Dimension I	**
$\delta$	$= 60 \pm 8^\circ$	Dimension II	**

\* \* According to the wear-parts list (BR)

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 4,7a 1

1. Edition

VA 6/100 H 1500 BR 138-3  
0 460 306 092

supersedes

company

engine

Hanomag  
D 161 W

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 D  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,6-6,6 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1570	12,0-18,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	380-510(350-540)	1000	1290-1420
	mm	Start	(5,3-6,9)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,4-5,3)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1610-1660 (1590-1680)	0	
		1570	(11,0-19,0)	
		1450	45,0-48,0 (44,0-49,0)	
		1200	(47,0-49,0)	
		500	37,0-40,0 (36,0-41,0)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(8,0-16,0)	
		100	mind.65,0	
End stop	Start	120-200		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 4,7a

2. Edition

En

VA 6/100 H 1500 BR 138-2  
0 460 306 091

supersedes 6.69  
company: Hanomag  
engine: D 162 W

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,1-7,1 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1580	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	530-680 (500-710)	1100	1240-1370
	mm	Start	(5,8-7,4)	8,7-9,4 (8,4-9,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(5,1-6,0)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1670 (1610-1690)	0	
		1580	(27,0-37,0)	
		1280	53,5-56,5 (52,5-57,5)	
		1100	(53,5-55,5)	
		600	55,5-58,5 (54,5-59,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(8,0-16,0)	
End stop	Start	100	mind.65,0	
		120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 5,0 mm (BMP 161/32)</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 4,2A

3. Edition

En

VA 6/100 H 1300 BR 138  
0 460 306 064

supersedes 4.69  
company Hanomag  
engine D 161 K

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

0,3

Pre-stroke setting mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,5 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	42,5-43,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1360	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	520-670 (490-700)	1000	1120-1240
	mm	Start	(3,2-4,8)	4,7-5,4 (4,4-5,7)
		100	1000	1300
2.2 Supply pump	rev/min			
	kp/cm <sup>2</sup>	0,8-1,3 (0,6-1,5)	(4,4-5,3)	5,6-6,1 (5,4-6,3)
		500		1000
Overflow delivery	rev/min	mind. 25		55-125 (40-140)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450 (1380-1470)	0	
		1360	(20,0-30,0)	
		1280	42,5-45,5 (41,5-46,5)	
		1100	(42,0-44,0)	
		500	37,5-40,5 (36,5-41,5)	
	Stop	1300	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(9,0-17,0)	
		100	mind. 65,0	
End stop	Start	130-230		

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 5,5 \text{ mm}$
$\beta$	$= 40 \pm 8^\circ$	Dimension V	$= - \text{mm}$
$\gamma$	$= 30 - 8^\circ$	Dimension I	$=$
$\delta$	$= 60 + 8^\circ$	Dimension II	$= *$
		Dimension III	$=$

\* According to the wear-parts list

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1b 2

1. Edition

En

VA 4/100 H 1500 BR 137-3  
0 460 304 096

supersedes

company:

Hanomag  
D 141 W

engine:

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	13,0-21,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720(530-740)	1100	1350-1470
	mm	Start	(4,7-6,3)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	1100	1500
	kp/cm <sup>2</sup>	0,6-1,1(0,4-1,3)	(4,2-5,1)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1680 (1610-1700)	0	
		1600	(16,0-24,0)	
		1450	50,0-53,0 (49,0-54,0)	
		1200	(52,0-54,0)	
		600	47,0-50,0 (46,0-51,0)	
	Stop	1500	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
	Start	100	mind.65,0	
End stop		300-550		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 DEE 2,5e

3. Edition

En

VA 3/100 H 1200 BR 28

supersedes 12.71  
company: John Deere  
engine: 493 B

Plunger lift 1.72 mm referenced to outlet  
"A" in line with engine TDC position.

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	6,9-7,9 mm		
1.2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1230	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	100-260 (70-290)	600	790-940
	mm	Start	(6,6-8,2)	9,7-10,4 (9,4-10,7)
		100	600	1000
2.2 Supply pump	rev/min	1,7-2,2 (1,5-2,4)	(4,9-5,8)	6,2-6,7 (6,0-6,9)
	kp/cm <sup>2</sup>	500	1000	
Overflow delivery	rev/min	mind. 25	55-125 (40-140)	
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1290-1380 (1270-1400)	0	
		1330	max. 3,0	
		1230	(25,0-35,0)	
		1150	46,5-49,5 (45,5-50,5)	
		1000	(48,0-50,0)	
		500	41,5-45,5 (40,5-46,5)	
		100	mind. 32,5	
	Stop	1200	0	
Idle stop	Full	470-530 (450-550)	0	
		400	(8,0-16,0)	
	Start	--	--	
End stop		--		

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 3,0 \text{ mm}$
$\beta$	$= 30 \pm 8^\circ$	Dimension V	$= - \text{ mm}$
$\gamma$	$= 30 \pm 8^\circ$	Dimension I	$= 7,0 \text{ mm}$
$\delta$	$= 60 \pm 8^\circ$	Dimension II	$= 10,5 \text{ mm}$
		Dimension III	$= 26,8 \text{ mm}$

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 4,2 a 1

1. Edition

VA 6/100 H 1300 BR 138-1

O 460 306 065

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company Hanomag

engine D 162 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,7-7,1 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		2,5
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		3,0
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	530-680 (500-710)	1100	1180-1300
	mm	Start	(5,8-7,4)	7,7-8,4 (7,4-8,7)
		100	1100	1300
2.2 Supply pump	rev/min	1,0-1,5 (0,8-1,7)	(5,1-6,0)	5,9-6,4 (5,7-6,6)
	kp/cm <sup>2</sup>	500		100
Overflow delivery	rev/min	mind.25		55-125 (40-140)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1470 (1410-1490) 1380 1280 1100 500	0  (27,0-37,0) 53,5-56,5 (52,5-57,5) (53,5-55,5) 52,0-55,0 (51,0-55,0)	
	Stop	1300	0	
Idle stop	Full	400-460 (380-480) 300	0  (8,0-16,0)	
End stop	Start	100 120-200	mind.65,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = - mm</p> <p>Dimension I =</p> <p>Dimension II = *</p> <p>Dimension III</p>

\* According to the wear-parts list

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b

2. Edition

En

VA 4/100 H 1250 BR 141-3  
0 450 304 131

supersedes 7.71  
company: Saviem  
engine: Manox 712-51

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,3-6,3 mm		
1.2 Supply pump pressure	900	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	49,0-50,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	- - -	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	380-530 (350-560)	900	1100-1250
	mm	Start	(5,0-6,6)	8,7-9,4 (8,4-9,7)
2.2 Supply pump	rev/min	100	900	1250
	kp/cm <sup>2</sup>	0,8-1,3 (0,6-1,5)	(4,6-5,5)	5,4-5,9 (5,2-6,1)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430)	0	
		1300	(31,0-39,0)	
		1250	51,0-54,0 (50,0-53,0)	
		900	(48,5-50,5)	
		500	44,0-47,0 (43,0-48,0)	
	Stop	1250	0	
Idle stop	Full	350-400 (330-420)	0	
		300	(6,0-14,0)	
		100	mind. 80,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump <math>\alpha = 25 \pm 4^\circ</math> <math>\beta = 35 \pm 8^\circ</math> <math>\gamma = 30 \pm 8^\circ</math> <math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump Dimension IV = 2,0 mm Dimension V = - mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 a

2. Edition

En

VA 4/100 H 1600 BR 141  
0 460 304 081

supersedes 6.68  
company Renault  
engine 7120-03/04

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,0-49,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1640	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	340-520(310-550)	800	1390-1570
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1600
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	4,0-4,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1850 (1720-1870)	0	
		1770	max. 5,0	
		1640		(35,0-45,0)
		1550	45,5-48,5	(44,5-49,5)
		1000		(47,5-49,5)
		800	40,5-44,0)	(39,5-45,0)
	Stop	1600	0	
Idle stop	Full	370-480 (350-500)	0	
		300		(8,5-16,5)
		100	mind.80,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>According to the wear-parts list</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1a 4  
1. Edition

En

VA 4/100 H 1700 CR 118  
CR 118-2

0 460 304 129  
0 460 304 152

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm 0,02$  ( $\pm 0,04$ )

supersedes

company: Hanomag  
engine: D 141 L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	2,8-3,6 mm		
1.2 Supply pump pressure	1300	5,4-3,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	47,0-48,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1850	16,0-24,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	750-900(720-930)	1300	1550-1670
	mm	Start	(2,5-3,9)	5,1-5,8(4,8-6,1)
		200	1300	1700
2.2 Supply pump	rev/min	1,0-1,5(0,8-1,7)	(5,2-6,1)	6,7-7,2(6,5-7,4)
	kp/cm <sup>2</sup>	500		1700
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1880-1960 (1860-1980)	0	
		1850	(15,0-25,0)	
		1650	43,5-46,5 (42,5-47,5)	
		1000	(46,5-48,5)	
		500	41,0-45,0 (40,0-46,0)	
	Stop	1700	0	
Idle stop	Full	430-560 (410-580)	0	
End stop	Start	100	mind.65,0	
		180-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension <math>\overline{W}</math> 4,5 mm</p> <p>Dimension <math>\overline{Y}</math> 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1a 1

2. Edition

En

VA 4/100 H 1700 CR 118-1  
CR 118-3

0 460 304 130 Setting of the pointer at a stroke of 1 mm in  
0 460 304 153 relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes 12.70  
company Hanomag  
D 142 L  
engine

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	3,6-4,4 mm		
1.2 Supply pump pressure	1300	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1750	38,5-46,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	1300	1550-1700
2.1 Timing device	rev/min	750-930 (720-960)		
	mm	Start	(3,3-4,7)	6,1-6,8 (5,8-7,1)
		200	1300	1700
2.2 Supply pump	rev/min	1,2-1,7 (1,0-1,9)	(5,2-6,1)	6,9-7,4 (6,7-7,6)
	kp/cm <sup>2</sup>	500		1700
Overflow delivery	rev/min	55-100 (40-110)		55-100 (40-110)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1870-1920 (1850-1940)	0	
		1750	+ 1,0 (37,5-47,5)	
		1680	55,0-58,0 (54,0-59,0)	
		1000	+ 0,5 (54,0-56,0)	
		600	53,0-57,0 (52,0-58,0)	
	Stop	1700	0	
Idle stop	Full	480-580 (460-600)	0	
		350	$\pm$ (9,0-17,0)	
		100	mind.65,0	
End stop	Start	180-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 b 7

1. Edition

En

VA 4/100 H 1300 CR 141-10  
0 460 304 216

supersedes

company: Savim

engine: 712-50-050

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,1-4,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	39,0-40,4 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	470-620(440-650)	1000	1200
	mm	Start	2,8-4,4	4,3-5,3
2.2 Supply pump	rev/min	200	1000	1300
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(5,3-6,2)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1300
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1420-1500 (1400-1520) 1350 1320-1350 1300 900 500	0 (38,6-41,4) Start 55,5-58,5 (54,5-59,5) (55,5-57,5) 48,5-51,1 (47,5-52,5)	
	Stop	1300	0	
Idle stop	Full	450-520 (430-540) 300 100	0 (16,0-24,0) mind. 80,0	
End stop	Start	110-210		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,6 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 b 8

1. Edition

En

VA 4/100 H 1500 CR 141-11  
0 460 304 211

supersedes

company:

engine:

Saviem  
712-52-01

Pre-stroke setting 0,5 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	6,2-7,2 mm		
1.2 Supply pump pressure	1200	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(330-520)	1200	1380-1530
	mm	Start	(5,5-6,6)	7,9-8,6(7,6-8,9)
2.2 Supply pump	rev/min	200	1200	1500
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(5,6-6,5)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1680-1780 (1660-1800) 1600 1520-1550 1500 900 500	0  Start (25,0-35,0) 47,5-50,5 (46,5-51,5) (53,0-55,0) 45,0-49,0 (49,0-50,0)	
	Stop	1500	0	
Idle stop	Full	370-450 (350-470) 300	0  (6,0-14,0)	
End stop	Start	110-210	mind.80,0	

C15

**BOSCH**

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.  
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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV -- IT/IT1 Dimension V -- IT/IT1

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 SAV 3,3 d

2. Edition

VA 4/100 H 1600 CR 141-1  
0 460 304 141

supersedes 4.78  
company: Saviem  
engine: 712..

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,2-6,0 mm		
1.2 Supply pump pressure	1200	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1720	7,0-13,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	430-580(400-610)	1200	1500-1600
	mm	Start	(4,9-6,3)	8,0-8,7(7,7-9,0)
2.2 Supply pump	rev/min	200	1200	1500
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(5,5-6,4)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1600
	cm <sup>3</sup> /10 s	55-100(40-110)		55.100(40-110)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1770-1860 (1750-1880)	0	
		1720	(6,0-14,0)	
		1550	48,5-51,5 (47,5-52,5)	
		900	(54,0-56,0)	
		500	46,5-50,5 (45,5-51,5)	
	Stop	1600	0	
Idle stop	Full	360-430 (340-450)	0	
		300	(6,0-14,0)	
		1000	mind.80,0	
End stop		120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 SAV 5,2a 3

2. Edition

VA 6/100 H 1000 CR 124-8  
0 460 306 197

supersedes 5.76  
company: Saviem  
engine: 597-50-061

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,2 mm  $\pm 0,02$  ( $\pm 0,04$ )

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,0-3,0 mm		
1.2 Supply pump pressure	800	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		2,5
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1070	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	550-650(520-680)	700	800	900	950-1070
		0,8-1,8(0,5-1,5)	(1,7-3,3)	3,1-4,1	(2,8-4,4)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	800			1000
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,1-5,0)			4,9-5,4(4,7-5,6)
		500				1000
Overflow delivery	rev/min	55-100(40-110)				55-100(40-110)
	cm <sup>3</sup> /10 s					

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1090-1170 (1070-1190)	0	
		1070	(20,0-30,0)	
		1000	51,5-54,5 (50,5-55,5)	
		700	(53,5-55,5)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1000	0	
Idle stop	Full	360-430 300	0 (6,0-14,0)	
		100	mind.95,0	
End stop	Start	150-250		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 35 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 1,6 mm Dimension V = 24,6 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3e

2. Edition

En

VA 4/100 H 1600 CR 147-7  
0 460 304 169

supersedes 4.78  
company Savim  
engine 720-01-01

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,02( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,2-6,0 mm		
1.2 Supply pump pressure	1200	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3m0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1750	8,0-16,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	430-580(400-610)	1200	1500-1600
	mm	Start	(4,9-6,3)	8,0-8,7(7,7-9,0)
2.2 Supply pump	rev/min	200	1200	1600
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,3-6,2)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500		1600
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1800-1920 (1780-1940)	0	
		1750	(7,0-17,0)	
		1550	58,5-61,5 (57,5-62,5)	
		900	(60,5-62,5)	
		500	55,0-59,0 (54,0-60,0)	
	Stop	1600	0	
Idle stop	Full	380-480 (360-500)	0	
		300	(6,0-14,0)	
	Start	100	mind.80,0	
End stop		120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,50 mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 5,2a 2  
2. Edition

VA 6/100 H 1250 CR 124-7  
0 460 305 195

supersedes 5.75  
company Savim  
engine: 797-50-051

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	4,65-4,75 mm		
1.2 Supply pump pressure	1100	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min	550-700(520-730)	700	1100	1120-1270
	mm	Start	0,5-1,5(0,2-1,8)	(4,35-5,05)	5,2-5,9(4,9-6,2)
		200		1100	1250
2.2 Supply pump	rev/min				
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,4-6,3)	6,1-6,6(5,9-6,8)	
		500			1250
Overflow delivery	rev/min				
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1430 (1360-1450)	0	
		1350	(15,0-25,0)	
		1250-1270	Start	
		1230	63,5-66,5 (62,5-67,5)	
		1100	(63,5-65,5)	
		500	53,0-57,0 (52,0-58,0)	
	Stop	1250	0	
Idle stop	Full	370-430 (350-450)	0	
		300	(6,0-14,0)	
		100	mind. 80,0	
End stop	Start	150-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,4 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 SAV 5,2 e

2. Edition

En

VA 6/100 H 1500 CR 124-9  
0 460 306 230

supersedes 12.78  
company Saviem  
engine 797 Marine

Pre-stroke setting 0,2 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,6-4,4 mm		
1.2 Supply pump pressure	1100	5,7-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	78,0-79,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1580	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	800	1100	1300	1350-1500
	mm	0,5-1,8(0,2-2,1) (3,3-4,7) 5,6-6,4(5,3-6,7) 7,0-7,7(6,7-8,0)			
2.2 Supply pump	rev/min	200	1100		1300
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)(5,5-6,9) 6,7-7,2(6,5-7,4)			
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110) 55-100(40-110)			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650	max. 1,0	
		1580	36,0-44,0 (35,0-45,0)	
		1450	76,5-79,5 (75,5-80,5)	
		1100	(77,5-79,5)	
		500	66,0-68,0 (65,0-69,0)	
	Stop	1500	0	
Idle stop	Full	420-480 (400-500) 300	0  (8,0-16,0)	
	Start	100	mind. 80,0	
End stop		150-250		

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**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 30 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,50 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

wpp 001/4 SAV 3,3 b 1  
2. Edition

En

VA 4/100 1500 CR 141-9  
0 460 304 197

supersedes

company:

engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,1-6,1 mm		
1.2 Supply pump pressure	1200	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	23,5-31,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	800	1200	1400	1400-1520
	mm	1,9-2,9(1,6-3,2)(4,8-6,4)6,4-7,4(6,1-7,7)7,0-7,7(6,7-8,0)			
2.2 Supply pump	rev/min	200	1200		1500
	kp/cm <sup>2</sup>	1,3-1,9(1,1-2,1) (5,7-6,6)		7,2-7,7(7,0-7,9)	
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1690-1800 (1670-1820)	0	
		1600	(22,5-32,5)	
		1450	59,5-62,5 (58,5-63,5)	
		1000	(63,5-65,5)	
		500	58,5-61,5 (57,5-62,5)	
	Stop	1500	0	
Idle stop	Full	400-500 (380-520)	0	
		300	(6,0-14,0)	
End stop	Start	100	mind. 80,0	
		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 MAN 5,2d

3. Edition

En

**Testoil-ISO 4113**

VA 6/100 H 1500 CR 181-4  
0 460 306 225

supersedes 9.78

company: **MAN**

engine: **Saviem 79702/03**

Pre-stroke setting  $0,5_{\text{mm}} \pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,7-6,5 mm		
1.2 Supply pump pressure	1200	6,2-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	63,0-64,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700	1200	1500
	mm	1,1-2,1 (0,8-2,4)	(5,4-6,8)	7,0-7,7 (6,7-7,9)
2.2 Supply pump	rev/min	200	1200	1500
	kp/cm <sup>2</sup>	1,6-2,1 (1,4-2,3)	(6,0-6,9)	7,2-7,7 (7,0-7,9)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1700-1750 (1680-1770)	0	
		1600	(27,0-37,0)	
		1500	62,0-65,0 (61,0-66,0)	
		1200	(62,5-64,5)	
		500	47,0-51,0 (46,0-52,0)	
	Stop	1500	0	
Idle stop	Full	420-470 (400-490)	0	
		300	(12,0-20,0)	
		100	mind. 75,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension IV = 3,80 mm Dimension V = 24,65 mm



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6,6 a

2. Edition

En

VA 6/100 H 1100 CR 178-1  
0 460 306 209

supersedes 5.77  
company Steyr  
engine WD 612.40

Pre-stroke setting 0,1 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,7-5,7 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	78,5-79,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	43,5-51,5 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	500	900	
	mm	0,6-1,6 (0,3-1,9)	(4,4-6,0)	
2.2 Supply pump	rev/min	200	900	1100
	kp/cm <sup>2</sup>	1,5-2,0 (1,3-2,2)	5,0-5,5 (4,8-5,7)	5,4-5,9 (5,2-6,1)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340)	0	
		1200	(42,5-52,5)	
		1100	70,75-73,25 (69,75-74,25)	
		800	(78,0-80,0)	
		500	72,0-75,0 (71,0-76,0)	
	Stop	1100	0	
Idle stop	Full	450-500 (430-520)	0	
		300	(11,0-19,0)	
		100	mind.90,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 0,60 mm</p> <p>Dimension V = 23,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0k  
2- Edition

VA 6/1000 H 1150 CR 160-2 .  
0 460 306 224

supersedes 10.77  
company Steyr  
engine WD 610.44

Pre-stroke setting 0,1 mm  $\pm 0,02(\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,2-4,2 mm		
1.2 Supply pump pressure	900	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	900	1000-1150
	mm	Start	(2,9-4,5)	5,2-4,9(3,9-5,2)
2.2 Supply pump	rev/min	200	900	1150
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,5-5,4)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1420 (1320-1440)	0	
		1250	(40,0-50,0)	
		1200-1230	Start	
		1150	(68,0-70,0)	
		900	65,5-67,5 (64,5-68,5)	
		500	63,5-66,5 (62,5-67,5)	
	Stop	1150	0	
Idle stop	Full	420-500 (400-520)	0	
		300	(16,0-24,0)	
		100	mind.90,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 1,60 mm Dimension V = 24,65 mm

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 5,0a

4. Edition

En

VA 6/100 H 1150 CR 160-4  
0 460 306 242

supersedes 4.80  
company: Steyr  
engine: WD 611.40

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,2-3,2 mm		
1.2 Supply pump pressure	1100	6,1-6,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	16,0-22,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	38,0-46,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	--	700	1100
	mm	Start	(1,9-3,5)	5,5-6,3(5,2-6,6)
2.2 Supply pump	rev/min	200	1100	1150
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,9-6,8)	--
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430) 1250 1100 900 500	0  (37,0-47,0) (55,5-57,5) 55,3-57,7 (54,3-58,7) 56,5-60,5 (55,5-61,5)	
	Stop	1150	0	
Idle stop	Full	430-480 (410-500) 300	0  (15,0-23,0)	
	Start	100	mind.90,0	
End stop		260-340		

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**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 4,20 mm Dimension V = 25,65 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6,0 f 3

1. Edition

En

VA 6/100 H 1400 CR 160-1  
0 460 306 151

supersedes Steyr  
company WD 610.00  
engine

Pre-stroke setting 0,1 mm  $\pm 0,02(\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,1-3,9 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	69,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1530	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	1000	110-1250
2.1 Timing device	rev/min	450-600(420-630)		
	mm	Start	(2,8-4,2)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	100	1000	1400
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,0-5,9)	6,3-6,8(6,1-7,0)
		500		1400
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1730 (1630-1750)	0	
		1600	max.5,0	
		1530	(25,0-35,0)	
		1400	66,5-68,5 (65,5-69,5)	
		1200	(68,5-71,5)	
		500	63,0-67,0 (62,0-68,0)	
	Stop	1400	0	
Idle stop	Full	420-490 (400-510)	0	
		300	(8,5-16,5)	
		100	mind.90,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 2,20 mm Dimension V = 24,60 mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 STE 6,0 f 1

2. Edition

VA 6/100 H 1150 CR 160  
0 460 306 143

supersedes 5.72  
company: Steyr  
engine: WD 610.50

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,6-3,4 mm		
1.2 Supply pump pressure	800	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	
2.1 Timing device	rev/min	300-450 (270-480)	800 1050-1150
	mm	Start	(2,3-3,7) 4,3-5,0(4,0-5,3)
		200	800 1150
2.2 Supply pump	rev/min	1,5-2,0(1,3-2,2)	(4,5-5,4) 5,9-6,4(5,7-6,6)
	kp/cm <sup>2</sup>	500	1150
Overflow delivery	rev/min	55-100(40-110)	55-100(40-110)
	cm <sup>3</sup> /10 s		

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280	max. 10,0	
		1250	(20,0-30,0)	
		1100	(61,5-63,5)	
		900	61,0-63,0 (60,0-64,0)	
		500	61,0-65,0 (60,0-66,0)	
	Stop	1150	0	
Idle stop	Full	370-420 (350-440) 300	0 (6,0-14,0)	
End stop	Start	100 120-220	mind.80,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 SAV 3,3 a 1  
3. Edition

VA 4/100 H 1600 CR 141  
CR 141-5

0 460 304 140  
0 460 304 161

supersedes 4.78  
company: Saviem  
engine: 712

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	6,2-7,2 mm		
1.2 Supply pump pressure	1300	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.5 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

	rev/min	400-500 (430-530)	700	1300	1450-1600
2.1 Timing device	mm	Start	1,4-2,4 (1,1- 2,7)	(5,9-7,5)	8,0-8,7 (7,7-9,0)
		200		1300	1600
2.2 Supply pump	rev/min	1,1-1,6 (0,9-1,8)		(5,8-6,7)	7,5-8,0 (7,3-8,2)
	kp/cm <sup>2</sup>	500			1600
Overflow delivery	rev/min	55-100 (40-110)			55-100 (40-110)
	cm <sup>3</sup> /10 s				

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1730-1800 (1710-1820)	0	
		1720	max. 13,0	
		1650	(25,0-35,0)	
		1580	41,0-44,0 (40,0-45,0)	
		100	(49,0-51,0)	
		500	40,0-44,0 (39,0-45,0)	
	Stop	1600	0	
Idle stop	Full	360-430 (340-450)	0	
		300	(6,0-14,0)	
		100	mind.80,0	
End stop	Start	110-220		

D17

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 6

1. Edition

En

VA 4/100 H 1350 CR 141-8  
0 460 304 182

supersedes

company:

Saviem  
712...

engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,2-4,0 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-12,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1450	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	700	1000	1200	1250-1400
	mm	470-620(440-650)				
		0,8-1,8(0,5-2,1)	(2,9-4,3)	4,3-5,3(4,0-5,6)	5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min	200	1000	1350	--	
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(5,3-6,2)			
		500		1350		
Overflow delivery	rev/min	55-100(40-110)				
	cm <sup>3</sup> /10 s					

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1490-1550 (1470-1570) 1450 1370-1400 1350 900 500	0  (17,0-25,0) Start 47,5-50,5 (46,5-51,1) (51,0-53,0) 53,5-56,5 (52,5-57,5)	
	Stop	1350	0	
Idle stop	Full	370-430 (350-450) 300 100	0  (6,0-14,0) mind.80,0	
End stop	Start	110-210		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,60 mm</p> <p>Dimension V = 24,60 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,6 b

2. Edition

VA 6/10 H 1400 CR 160-3  
0 460 306 237

supersedes 1.79  
company: Steyr  
engine: WD 612.00-LKW

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,1 mm  $\pm$  0,02( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,9-4,9 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1400	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	600	900	1100
	mm	start	1,5-2,2(1,2-2,5)	(3,6-5,2)	5,1-5,9(4,8-6,2)
2.2 Supply pump	rev/min	200		1100	1400
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)		(5,2-6,1)	(6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1400
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1750 (1630-1770) 1570 1500 1400 1100 500	0 max. 10,0 (35,0-45,0) (68,5-70,5) 71,0-73,0 (70,0-74,0) 64,5-68,5 (63,5-69,5)	
	Stop	1400	0	
Idle stop	Full	450-500 (430-520) 320	0 (8,0-16,0)	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,40 mm</p> <p>Dimension V = 24,65 mm</p>



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 5,2 b 1

1. Edition

VA 6/110 H 1450 CR 169-1  
0 460 316 020

supersedes

company: Saviem  
engine: 798-10-13

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,4 mm  $\pm$  0,02 ( $\pm$  0,04)

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,9-5,9 mm	0	
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	60,0-63,0 cm <sup>3</sup> /1000 strokes	0	2,5
Full-load delivery with charge-air pressure	900	80,0-81,0 cm <sup>3</sup> /1000 strokes	0,48	
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes	0	
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1550	36,0-44,0 cm <sup>3</sup> /1000 strokes	0,68	

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-550(420-580)	650	1000	1050-1200
	mm	Start	1,1-2,1(0,8-2,4)	(4,6-6,2)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1450
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)		(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500			1450
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1710 (1630-1730)	0	0,68
		1550	(35,0-45,0)	0,68
		1480-1520	Start	
		1450	76,5-79,5 (75,5-80,5)	0,68
		900	(79,5-81,5)	0,48
		750	(73,5-75,0)	0,35
		500	60,0-63,0 (59,0-64,0)	0
		1450	0	
Idle stop	Full	370-420 (350-440)	0	
		300	(11,0-19,0)	
		100	mind.100,0	
End stop	Start	110-220		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 b 3

1. Edition

En

VA 4/100 H 1500 BR 141-4  
0 460 304 146

supersedes

company

engine

**Saviem  
712**

Pre-stroke setting **0,1** mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	57,5-58,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	340-520(310-550)	800	1350-1480
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1500
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,6-6,0)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind. 25		85-125(70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1720 (1630-1740)	0	
		1600	(25,0-35,0)	
		1480	58,5-61,5 (57,5-62,5)	
		1000	(57,0-59,0)	
		500	52,0-55,5 (51,0-56,5)	
	Stop	1500	0	
Idle stop	Full	370-480 (350-500)	0	
		300	(8,5-26,5)	
		100	mind.80,0	
End stop	Start	120-220		

**E5**

ES

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 a 1

1. Edition

En

VA 4/100 H 1600 BR 141-1  
0 460 304 082

supersedes

company

engine

Saviem

7120-01/02

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1630	42,0-48,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	340-520(310-550)	800	1390-1570
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1600
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,3-5,2)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		85-125(70-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1860 (1720-1880)	0	
		1770	< 5,0	
		1630	(41,0-49,0)	
		1550	52,5-55,5 (51,5-56,5)	
		1000	(52,5-54,5)	
		500	47,5-50,5 (46,5-51,5)	
	Stop	1600	0	
Idle stop	Full	370-480 (350-500)	0	
		300	(8,5-16,5)	
		100	mind.80,0	
End stop	Start	120-220		

E7

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E7

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = - mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3 b 4

1. Edition

En

VA 4/100 H 1600 BR 141-5  
0 460 904 148

supersedes

company: **Saviem**

engine.

Pre-stroke setting  $0,1 \text{ mm}$   
Plunger lift  $0.3 \text{ mm}$  at  $23^\circ \text{ BTDC}$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,9 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	47,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1640	37,0-43,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	340-520(310-550)	800	1390-1570
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1600
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,0-4,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1859 (1720-1870)	0	
		1770	< 5,0	
		1640	(36,0-44,0)	
		1550	45,5-48,5 (44,5-49,5)	
		1000	(47,0-50,0)	
		500	41,0-44,0 (40,0-45,0)	
	Stop	1600	0	
Idle stop	Full	370-480 (350-500)	0	
		300	(8,5-16,5)	
	Start	100	mind.80,0	
End stop		120-200		

**E9**

E9

**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = - mm Dimension V = - mm According to the wear-parts list

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 SAV 3,3 b 5

1. Edition

En

VA 4/100 H 1500 BR 141-6  
0 460 304 151

supersedes

company: **Saviem**

engine 712 01-01  
01-02

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting  $0,1 \text{ mm}$   
Plunger lift  $0.3 \text{ mm}$  at  $23^\circ \text{ BTDC}$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	9,2-10,2 mm		
1.2 Supply pump pressure	1200	5,5- 6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	370-520(340-550)	1200	1400-1500
	mm	Start	(8.9-10,5)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	1200	1500
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(5,3-6,2)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		85-125(70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850 (1760-1870)	0	
		1740	< 10,0	
		1600	(30,0-40,0)	
		1450	54,0-57,0 (53,0-58,0)	
		1000	(52,5-54,5)	
		500	45,5-49,5 (44,5-50,0)	
	Stop	1500	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(8,5-16,5)	
		100	mind.80,0	
End stop	Start	120-220		

E11

E11

**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 2,0 mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 7

1. Edition

En

VA 6/100 H 1500 CR 124-4  
0 460 306 146

Setting of the pointer at astroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm  $\pm$  0,02(+ 0,04)

supersedes

company

engine:

Saviem  
797-05

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	6,0-14,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		880	1100	1350-1500
2.1 Timing device	rev/min	850-800(830-820)		
	mm	Start	1,0-2,4(0,7-2,7)	(2,8-4,2) 6,7-7,4(6,4-7,7)
		200	1100	1500
2.2 Supply pump	rev/min	1,4-1,9(1,2-2,1)	(5,6-6,3)	6,8-7,3(6,6-7,5)
	kp/cm <sup>2</sup>	500		1500
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1680-1780 (1660-1800) 1650 1480 1100 500	0  58,5-61,5 53,0-57,0	(5,0-15,0) (57,5-62,5) (63,0-65,0) (52,0-58,0)
	Stop	1500	0	
Idle stop	Full	400-500 (380-520) 300	0  (6,0-14,0)	
	Start	100	mind.80,0	
End stop		150-250		

E13

E43

**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 8

1. Edition

En

VA 6/100 H 1450 CR 124-6  
0 460 306 184

Setting of the pointer at a stroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes

company: Savim

engine: 797-40

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	6,0-14,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	1100	1350-1500
2.1 Timing device	rev/min	650-700 (620-730)		
	mm	Start	(2,8-4,2)	6,7-7,4 (6,4-7,7)
		200	1100	1450
2.2 Supply pump	rev/min	1,4-1,9 (1,2-2,1)	(5,5-6,4)	6,7-7,2 (6,5-7,4)
	kp/cm <sup>2</sup>	500		1450
Overflow delivery	rev/min	55-100 (40-110)		55-100 (40-110)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1750 (1630-1770)	0	
		1600	(5,0-15,0)	
		1430	59,5-62,5 (58,5-63,5)	
		1100	(63,0-65,0)	
		500	53,0-57,0 (52,0-58,0)	
	Stop	1450	0	
Idle stop	Full	400-500 (380-520)	0	
		300	(6,0-14,0)	
		100	mind. 80,0	
End stop	Start	150-250		

E15

E 15.

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,50 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 a 1  
2. Edition

En

VA 6/100 H 1450 CR 124  
0 460 306 121

supersedes 7.71  
company Saviem-MAN  
engine 597

Setting of the pointer at astroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	6,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1550	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	550-800(620-830)	1100	1350-1500
	mm	Start	(2,8-4,2)	7,0-7,7(6,7-8,0)
		200	1100	1450
2.2 Supply pump	rev/min	1,4-1,9(1,2-2,1)	(5,5-6,4)	6,8-7,3(6,6-7,5)
	kp/cm <sup>2</sup>	500		1450
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1620-1730 (1600-1750)	0	
		1550	(25,0-35,0)	
		1430	59,5-62,5 (58,5-63,5)	
		1100	(63,0-65,0)	
		500	51,5-55,5 (50,5-57,5)	
	Stop	1450	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(5,0-15,0)	
	Start	100	mind.80,0	
End stop		150-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 CIT 2,1c 2

1. Edition

VA 4/90 H 2250 CL 184  
0 460 394 030

supersedes

company: Citroen

engine: CRD 90L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7 mm		
1.2 Supply pump pressure	1400	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	36,0-37,0 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,5-15,5 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	mind. 58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	12,0-18,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	425-575(395-605)	1400	1800
	mm	Start	(4,0-5,0)	5,8-7,8(5,5-8,1)7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1400	2250
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,2-5,1)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500		2250
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2500-2600 (2480-2620)	0	
		2400	(11,0-19,0)	
		2250	33,0-35,0 (32,0-36,0)	
		600	30,0-33,0 (29,0-34,0)	
	Stop	2250	0	
Idle stop	Full	360-430 (340-450)	0	
		350	(8,5-16,5)	
		100	mind. 58,0	
		150-250		
End stop	Start			

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 1,6 mm Dimension V = 24,6 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 CIT 2,1c 1

1. Edition

En

VA 4/90 H 2250 CR 183  
0 460 394 023

supersedes  
company Citroen  
engine CRD-90 Export

Pre-stroke setting 0 mm  $\pm 0,02(\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7 mm		
1.2 Supply pump pressure	1400	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	36,0-37,0 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,5-15,5 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	mind. 58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	12,0-18,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets				
2.1 Timing device	rev/min	425-575(395-605)	700	1400	1800	2050-2200
	mm	Start				
		0,8-1,8(0,5-2,1)(4,0-5,0)5,8-6,8(6,1-7,1)7,0-7,7(6,7-8,0)				
		200				
2.2 Supply pump	rev/min	1,0-1,5(0,8-1,7)				
	kp/cm <sup>2</sup>	4,4-4,9(4,2-5,1)				
		500				
		55-100(40-110)				
Overflow delivery	rev/min					
	cm <sup>3</sup> /10 s	55-100(40-110)				

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2500-2600 (2480-2620)	0	
		2400	(11,0-19,0)	
		2250	33,0-35,0 (32,0-36,0)	
		1250	(35,5-37,5)	
		600	30,0-33,0 (29,0-34,0)	
	Stop	1150	0	
Idle stop	Full	360-430 (340-450)	0	
		350	(8,5-16,5)	
	Start	100	mind. 58,0	
End stop		150-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,6 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3b 4

1. Edition

En

VA 3/100 H 1300 CR 52-1  
0 460 303 099

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,04

supersedes

company Hanomag  
D 132-35 PS  
engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	900	1,2-2,2 mm		
1 2 Supply pump pressure	900	4,5-5,0 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	800	59,0-60,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1 5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	630-780(600-810)	900	980-1120
	mm	Start	(0,9-2,5)	2,4-3,1(2,1-3,4)
2 2 Supply pump	rev/min	100	900	1300
	kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,3-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	800		1300
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1460 (1380-1480)	0	
		1350	(27,0-37,0)	
		1250	54,5-57,5 (53,5-58,5)	
		800	(58,5-60,5)	
		500	54,5-58,5 (53,5-59,5)	
	Stop	1300	0	
Idle stop	Full	380-480 (360-500)	0	
		300	(9,0-17,0)	
	Start	100	mind.65,0	
End stop		mind.150		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV =      mm</p> <p>Dimension V = 24,65mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 2,3 d 4

1. Edition

VA 3/100 H 1300 CR 52-3

0 460 303 101

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,02

supersedes

Hanomag

company

D 132-40 PS

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,6-2,4 mm		
1.2 Supply pump pressure	900	3,9-4,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	49,0-50,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	
2.1 Timing device	rev/min	650-790(620-820)	900
	mm	Start	(1,3-2,7)
		100	900
2.2 Supply pump	rev/min	0,8-1,3(0,6-1,5)	(3,7-4,6)
	kp/cm <sup>2</sup>	500	1300
Overflow delivery	rev/min	55-100(40-110)	55-100(40-110)
	cm <sup>3</sup> /10 s		

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440)	0	
		1350	(27,0-37,0)	
		1250	48,0-51,0 (47,0-52,3)	
		1100	(48,5-50,5)	
		500	44,0-48,0 (43,0-49,0)	
	Stop	1300	0	
Idle stop	Full	380-430 (360-450)	0	
		300	(9,0-17,0)	
		100	mind.65,0	
End stop	Start	mind.150		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = -- mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 2,3 c 1

1. Edition

En

VA 3/100 H 1500 BR 129-5  
0 460 303 089

supersedes

company: Hanomag

engine: D 131 W

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-7,0 mm		
1.2 Supply pump pressure	1000	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.60,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1560	15,0-23,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	510-640(480-670)	1000	1260-1400
	mm	Start	(5,7-7,3)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	0,7-1,2(0,5-1,4)	(4,5-5,4)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1580-1630 (1560-1650)	0	
		1560	(14,0-24,0)	
		1450	49,0-52,0 (48,0-53,0)	
		1200	(50,0-52,0)	
		600	44,0-47,0 (43,0-48,0)	
	Stop	1500	0	
Idle stop	Full	380-440 (360-460)	0	
		300	(10,0-18,0)	
	Start	100	mind.60,0	
End stop		300-550		

F5

**BOSCH**

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = - mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 2,3a 1

1. Edition

VA 3/100 H 1300 BR 129-1  
0 460 303 081

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company: Hanomag

engine: D 132

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,5-5,5 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 60,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	550-700 (520-730)	1000	1050-1200
	mm	Start	(4,2-5,8)	5,7-6,4 (5,4-6,7)
2.2 Supply pump	rev/min	100	1000	1300
	kp/cm <sup>2</sup>	0,8-1,3 (0,6-1,5)	(4,8-5,7)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500		1300
	cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1440 (1370-1460)	0	
		1350	(27,0-37,0)	
		1250	53,5-56,5 (52,5-57,5)	
		800	(57,0-59,0)	
		500	50,5-54,0 (49,5-55,0)	
	Stop	1300	0	
Idle stop	Full	340-390 (320-410)	0	
		300	(9,0-17,0)	
		100	mind. 60,0	
End stop		300-550		

**BOSCH**

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	= - mm
$\beta$	$= 40 \pm 8^\circ$	Dimension V	= - mm
$\gamma$	$= 30 - 8^\circ$	Dimension I	= 7,0mm
$\delta$	$= 60 + 8^\circ$	Dimension II	= 6,5mm
		Dimension III	= 27,8mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 DEE 2,5e 1  
1. Edition

En

VA 3/100 H 1050 BR 28-1

supersedes John Deere  
company 493 B  
engine:

Plunger lift 1.72 mm referenced to outlet  
"A" in line with engine TDC position.

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	6,9-7,9 mm		
1.2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1110	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		100-260 (70-290)	600	790-940
2.1 Timing device	rev/min	Start	(6,6-8,2)	9,7-10,4 (9,4-10,7)
	mm	100	600	1000
2.2 Supply pump	rev/min	1,7-2,2 (1,5-2,4)	(4,9-5,8)	6,2-6,7 (6,0-6,9)
	kp/cm <sup>2</sup>	500	1050	
Overflow delivery	rev/min	mind.25	55-125 (40-140)	
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1170-1260 (1150-1280)	0	
		1210	max. 3,0	
		1110	(25,0-35,0)	
		1000	(48,0-50,0)	
		500	41,5-45,5 (40,5-46,5)	
		100	mind.32,5	
	Stop	1050	0	
Idle stop	Full	470-530 (450-550)	0	
		400	(8,0-16,0)	
End stop	Start			

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 3,0 \text{ mm}$
$\beta$	$= 30 \pm 8^\circ$	Dimension V	$= - \text{ mm}$
$\gamma$	$= 30 - 8^\circ$	Dimension I	$= 7,0 \text{ mm}$
$\delta$	$= 30 - 8^\circ$	Dimension II	$= 10,5 \text{ mm}$
	$= 60 + 8^\circ$	Dimension III	$= 26,8 \text{ mm}$

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 a 2

1. Edition

VA 4/100 H 1700 BR 118-4  
0 460 304 107

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes

company Hanomag  
D 122 LS

engine.

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,4-7,4 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1810	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min	600-750(570-780)	1100	1350-1500
	mm	Start	(6,1-7,7)	10,7-11,4(10,4-11,7)
		100	1100	1700
2.2 Supply pump	rev/min	0,5-1,0(0,3-1,2)	(5,2-6,1)	7,3-7,8(7,1-8,0)
	kp/cm <sup>2</sup>		1500	
Overflow delivery	rev/min	85-155(70-170)		
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1920 (1850-1940)	0	
		1810	(21,0-29,0)	
		1680	54,5-57,5 (53,5-58,5)	
		1000	(53,0-55,0)	
		500	48,0-52,0 (47,0-53,0)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560)	0	
		450	(2,0-8,0)	
		350	(9,0-17,0)	
End stop	Start	100	mind.65,0	
		300-550		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 45 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 5,2 a 4

1. Edition

VA 6/100 H 1300 BR 124-1  
0 460 306 067

supersedes

company: Renault (Saviem)

engine: 597-01

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,2 mm  
Plunger lift 0.3 mm at 23° BTDC

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	7,3-8,3 mm		
1.2 Supply pump pressure	1000	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-560(370-590)	1000	1120-1250
	mm	Start	(7,0-8,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	1000	1300
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(5,4-6,3)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	1300
	cm <sup>3</sup> /10 s	mind. 25	55-125(40-140)	55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500)	0	
		1450	max. 5,0	
		1350	(40,0-50,0)	
		1300	57,5-60,5 (56,5-61,5)	
		1000	(55,5-57,5)	
		500	47,5-51,0 (46,5-52,0)	
	Stop	1300	0	
Idle stop	Full	300-350 (280-370)	0	
		250	(11,0-19,0)	
		100	mind. 70,0	
End stop	Start	110-210		

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha = 25 \pm 4^\circ$		Dimension IV	5,0 mm
$\beta = 55 \pm 8^\circ$		Dimension V	- mm
$\gamma = 30 - 8^\circ$		Dimension I	= 7,0 mm
$\delta = 60 + 8^\circ$		Dimension II	= 10,5 mm
		Dimension III	= 35,3 mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 5

1. Edition

VA 6/100 H 1500 BR 124-4  
0 460 306 150

Setting of the pointer at astroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm

supersedes

company

engine

Saviem

D 797.05

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,5-7,5 mm		
1.2 Supply pump pressure	1000	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	58,5-59,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1610	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	420-570(390-600)	1000	1350-1440
	mm	Start	(6,2-7,8)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(5,7-6,6)	7,5-8,0(7,3-8,2)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-155(40-170)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1700 (1610-1720) 1650 1610 1500 1000 500	0 max. 13,0 (25,0-35,0) 58,0-61,0 (57,0-62,0) (58,0-60,0) 49,0-52,0 (48,0-53,0)	
	Stop	1500	0	
Idle stop	Full	390-450 (370-470) 300 100	0 (6,0-14,0) mind.75,0	
End stop	Start	110-210		

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= - \text{mm}$
$\beta$	$= 55 \pm 8^\circ$	Dimension V	$= - \text{mm}$
$\gamma$	$= 30 \pm 8^\circ$		
$\delta$	$= 60 \pm 8^\circ$		

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,0a 2

1. Edition

En

VA 4/100 H 1600 BR 127  
0 460 304 056

\*\* See 3,0a 1

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes

company Savim

engine 599

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.76,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1670	27,0-33,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	800	1400-1560
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1500
	kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,0-4,9)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500	1500	1600
	cm <sup>3</sup> /10 s	mind.25	55-155(40-170)	55-155(40-170)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1730-1780 (1710-1800) 1670 1600 1000 500 500	0  (26,0-34,0) 43,5-46,5 (42,5-47,5) (49,0-51,0) 42,5-46,5 (41,5-47,5) 29,75-36,25(28,75-37,25)	
	Stop	1600	0	
Idle stop	Full	390-440 (370-460) 315-325	0  (12,0-20,0)	
End stop	Start	100 110-210	mind.76,0	

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F17

**BOSCH**

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension IV = - mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 2,3a

2. Edition

VA 3/100 H 1300 BR 129  
0 460 303 080

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes 1.68  
company Hanomag  
engine D 131

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,3-4,3 mm		
1.2 Supply pump pressure	1100	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,0-52,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	25,0-33,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	750-850 (720-880)	1100	1100-1200
	mm	Start	(3,0-4,6)	3,7-4,4 (3,4-4,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,6-1,1 (0,4-1,3)	(4,8-5,7)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min	500	1000	1300
	cm <sup>3</sup> /10 s	mind.25	55-125 (40-140)	55-125 (40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500)	0	
		1380	(24,0-34,0)	
		1300	50,5-53,5 (49,5-54,5)	
		1000	(50,5-52,5)	
		600	51,0-54,5 (50,0-55,5)	
	Stop	1300	0	
Idle stop	Full	420-480 (400-500)	0	
		300	(10,0-18,0)	
	Start	100	mind.70,0	
End stop		300-550		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = - mm Dimension V = - mm Dimension = 7,0 mm Dimension = 4,5 mm Dimension = 25,8 mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel injection Pump

# 46

WPP 001/4 HAN 3,1 f  
2. Edition

VA 4/100 H 1000 BR 56

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes 6.70  
company: Hanomag  
engine D 142

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,3-3,3 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1050	49,0-57,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	530-650 (500-680)	800	850-950
	mm	Start	(2,0-3,6)	3,7-4,4 (3,4-4,7)
2.2 Supply pump	rev/min	100	800	1000
	kp/cm <sup>2</sup>	1,1-1,6 (0,9-1,8)	(4,3-5,2)	5,1-5,6 (4,9-5,8)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125 (40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1170 (1100-1190) 1050 980 800 500	0  (48,0-58,0) 52,5-55,5 (51,5-56,5) (54,0-56,0) 51,5-54,5 (50,5-55,5)	
	Stop	1000	0	
Idle stop	Full	370-450 (350-470) 300	0  (10,0-18,0)	
End stop	Start	100 mind.150	mind. 750	

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 3.1 c

3. Edition

VA 4/100 H 1150 BR 55

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes 4.69  
company Hanomag  
engine D 142 K

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,0-5,0 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750 (570-780)	1000	1020-1120
	mm	Start	(3,7-5,3)	4,7-5,4 (4,4-5,7)
		100	1000	1150
2.2 Supply pump	rev/min	1,0-1,5 (0,8-1,7)	(4,8-5,7)	5,5-6,0 (5,3-6,2)
	kp/cm <sup>2</sup>	500	1000	
Overflow delivery	rev/min	mind. 25	55-125 (40-140)	
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300)	0	
		1200	(32,0-42,0)	
		1130	47,5-50,5 (46,5-51,5)	
		800	(50,0-52,0)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1150	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(8,5-16,5)	
		100	mind. 75,0	
		500	max. 45,0	
End stop	Start			

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 7,0 mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 e  
2. Edition

En

VA 6/100 H 1400 BR 57

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes 6.69  
company: I H C  
engine: D 310

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,4 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,8-6,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	27,0-35,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	380-530(350-560)	800	1130-1280
	mm	Start	(5,5-7,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1400
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,7-5,6)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1570-1800 (1550-1820)	0	
		1590	< 5,0	
		1500	(26,0-36,0)	
		1400	61,0-64,0 (60,0-65,0)	
		1250	(63,0-65,0)	
		500	57,0-60,0 (56,0-61,0)	
	Stop	1400	0	
Idle stop	Full	500-560 (480-580)	0	
		400	(8,0-16,0)	
		100	mind.85,0	
		500	mind.30,0-57,0	
End stop		mind.180		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,5 mm (s.a.BMP 161/32)</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 PER 5,8 L

1. Edition

VA 6/100 H 1400 BL 1

0 460 306 046

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes  
company: Miko-Perkins  
engine: 6/354

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	3,0-3,8 mm		
1.2 Supply pump pressure	700	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	55,0-56,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	8,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	43,5-51,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	550-630 (520-660)	750	1300-1500
	mm	Start	(2,7-4,1)	13,7-14,4 (13,4-14,7)
2.2 Supply pump	rev/min	100	700	1400
	kp/cm <sup>2</sup>	2,1-2,7 (1,7-2,9)	(4,1-4,0)	7,0-7,5 (6,8-7,7)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	mind.25		55-100 (40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1630 (1540-1650)	0	
		1400	(42,5-52,5)	
		1400	57,5-60,5 (56,5-61,5)	
		700	(54,5-56,5)	
		500	51,5-55,5 (50,5-56,5)	
	Stop	1400	0	
Idle stop	Full	280-330 (260-350)	0	
		250	(7,0-15,0)	
		100	mind.85	
End stop	Start	500	max. 45	
		mind.190		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 63 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 a

3. Edition

VA 4/100 H 1700 BR 118  
BR 118-2

supersedes c. 70  
company Hanomag  
D 141 L  
engine

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

0,1 mm  
Pre-stroke setting

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1300	5,5-6,5 mm		
1 2 Supply pump pressure	1300	6,0-6,5 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	1000	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation		cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	750-910(720-940)	1300	1450-1600
	mm	Start	(5,2-6,8)	8,7-9,4(8,4-9,7)
2 2 Supply pump	rev/min	100	1300	1700
	kp/cm <sup>2</sup>	0,5-1,0(0,3-1,2)	(5,8-6,7)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500	1500	
	cm <sup>3</sup> /10 s	mind.25	85-155(70-170)	

### 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1960 (1870-1980) 1800 1700 1300 1000 500	0  (25,0-35,0) 44,5-47,5 (43,5-48,5) 49,5-51,5 (48,5-52,5) (47,0-49,0) 43,5-46,5 (42,5-47,5)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560) 350	0  (9,0-17,0)	
End stop	Start	100 300-550	mind.65,0	

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Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	$= 2,5 \text{ mm}$
$\beta$	$= 55 \pm 8^\circ$	Dimension V	$= - \text{ mm}$
$\gamma$	$= 45 \pm 8^\circ$	Dimension I	$= 7,0 \text{ mm}$
$\delta$	$= 60 \pm 8^\circ$	Dimension II	$= 9,0 \text{ mm}$
		Dimension III	$= 30,3 \text{ mm}$

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 5,2 a

3. Edition

VA 6/100 H 1450 BR 124  
0 460 306 048

supersedes 7.71  
company Savim  
engine 597.02

Pre-stroke setting 0,2 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,7-7,7 mm		
1.2 Supply pump pressure	1000	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	21,0-27,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1560	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	420-570(390-600)	1000	1350-1440
	mm	Start	(6,4-8,0)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	1000	1450
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(5,7-6,6)	7,5-8,0(7,3-8,2)
Overflow delivery	rev/min	500		1450
	cm <sup>3</sup> /10 s	mind.25		85-155(70-170)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1600-1800 (1580-1820)	0	
		1650	max.5,0	
		1560	(25,0-35,0)	
		1450	53,0-56,0 (52,0-57,0)	
		1000	(59,5-61,5)	
		500	52,5-56,0 (51,5-57,0)	
	Stop	1450	0	
Idle stop	Full	340-390 (320-410)	0	
		300	max.9,0	
		250	(20,0-28,0)	
End stop	Start	100	mind.75,0	
		110-210		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 60 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 5,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 35,3 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1a 1

1. Edition

VA 4/100 H 1700 BR 118-1  
BR 118-3

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes

company: Hanomag

engine: D 142 L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,4-7,4 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	55,0-56,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1810	22,0-28,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750 (570-780)	1100	1350-1500
	mm	Start	(6,1-7,7)	10,7-11,4 (10,4-11,7)
		100	1100	1700
2.2 Supply pump	rev/min	0,5-1,0 (0,3-1,2)	(5,2-6,1)	7,3-7,8 (7,1-8,0)
	kp/cm <sup>2</sup>		1500	
Overflow delivery	rev/min	85-155 (70-170)		
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1870-1920 (1850-1940) 1810 1680 1000 500	0  (21,0-29,0) 55,0-58,0 (54,0-59,0) (54,5-56,5) 53,5-56,5 (52,5-57,5)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560) 450	0  (2,0-8,0)	
End stop	Start	100 300-550	mind. 65,0	

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 45 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 0,5 mm (s.a.BMP 161/32) Dimension V = - mm I = 7,0 mm Dimension II = 11,0 mm Dimension III = 32,3 mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1d 3

1. Edition

VA 4/100 H 1200 BR 58

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes

company:

Hanomag

D 142

engine:

Pre-stroke setting 0,1 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,2-4,2 mm		
1.2 Supply pump pressure	900	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	20,0-26,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-730 (570-760)	900	950-1050
	mm	Start	(2,9-4,5)	4,7-5,4 (4,4-5,7)
2.2 Supply pump	rev/min	- 100	900	1200
	kp/cm <sup>2</sup>	0,9-1,4 (0,7-1,6)	(4,9-5,8)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	25-55 (40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1290-1340 (1270-1360)	0	
		1250	(32,0-42,0)	
		1180	52,5-55,5 (51,5-56,5)	
		800	(56,5-58,5)	
		500	57,0-60,0 (56,0-61,0)	
	Stop	1200	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(19,0-27,0)	
End stop	Start	100	mind. 85,0	

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 1,5 mm (s.a.BMP) Dimension V = - mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 GUL 2,3b 2

1. Edition

En

VA 3/100 H 1050 BR 111-1

0 460 303 074

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1mm

supersedes

company: Guldner

engine: 3 L 76

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,9-5,9 mm		
1.2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	46,5-47,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1100	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	700	850-1000
	mm	Start	(4,6-6,2)	8,7-9,4(8,4-9,7)
		100	700	1000
2.2 Supply pump	rev/min	0,8-1,3(0,6-1,5)	(4,2-5,1)	5,5-6,0(5,3-6,2)
	kp/cm <sup>2</sup>	500	1000	
Overflow delivery	rev/min	mind. 25	55-125(40-140)	
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1160 (1100-1180)	0	
		1100	(15,0-25,0)	
		1000	47,5-50,5 (46,5-51,5)	
		700	(46,0-48,0)	
		500	44,5-47,4 (43,5-48,5)	
	Stop	1050	0	
Idle stop	Full	280-330 (260-350)	0	
		250	(15,0-25,0)	
End stop	Start	100 130-230	mind.110,0	

G15

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GOL 2,3 b 2

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 48 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = - mm Dimension V = - mm <b>Dimensions for pre-setting</b> Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 30,8 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6, Of 2

1. Edition

VA 6/100 H 1150 BR 160  
0 460 306 107

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company

engine:

Steyr  
WD 610-50

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	60,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450 (270-480)	800
	mm	Start	(4,5-6,1)
2.2 Supply pump	rev/min	100	800 1150
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(4,3-5,2) 5,8-6,3 (5,6-6,5)
Overflow delivery	rev/min	500	1000
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280-1340 (1260-1360) 1250 1100 900 500	0  (25,0-35,0) (60,0-63,0) 60,5-62,5 (59,5-63,5) 59,0-62,0 (58,0-63,0)	
	Stop	1150	0	
Idle stop	Full	370-420 (350-440) 300	0  (6,0-14,0)	
End stop	Start	100 120-220	mind.80,0	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,5 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0e 1

1. Edition

VA 6/100 H 1400 BR 160-1  
0 460 306 112

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes

company:

Steyr

engine:

WD 610

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,3-7,3 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	66,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1510	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	340-490(310-520)	1000	1200-1350
	mm	Start	(6,0-7,6)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	1000	1400
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(4,9-5,8)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1620 (1540-1640)	0	
		1510	(25,0-35,0)	
		1350	62,5-64,5 (61,5-65,5)	
		1200	(65,5-68,5)	
		500	63,0-67,0 (62,0-68,0)	
	Stop	1400	0	
Idle stop	Full	430-510 (410-530)	0	
		300	(8,5-16,5)	
End stop	Start	100 120-220	mind. 90,0	

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 3,0 mm Dimension IV = - mm Dimension V = - mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 FIA 1,9 c

2. Edition

En

VA 4/90 H 1900 BR 157  
0 460 394 006

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes 7.71  
company Fiat  
engine 237

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	7,3-8,3 mm		
1.2 Supply pump pressure	1300	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1950	16,0-24,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	330-500(300-530)	1300	1720-1870
	mm	Start	(7,0-7,6)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	1300	1850
	kp/cm <sup>2</sup>	0,5-1,0(0,3-1,2)	(4,3-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2080-2200 (2060-2220)	0	
		1950	(15,0-25,0)	
		1800	31,5-34,5 (30,5-35,5)	
		1500	(32,5-34,5)	
		500	28,5-32,0 (27,5-33,0)	
	Stop	1900	0	
Idle stop	Full	420-500 (400-520)	0	
		320	(9,0-17,0)	
		100	mind.65,0	
		200-300		
End stop	Start			

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 1,5 mm Dimension IV = - mm Dimension V

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6,0 e

2. Edition

VA 6/100 H 1300 BR 153  
0 460 306 098

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes 6.70  
company Steyr  
engine W 610-01

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	32,0-38,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		300-450 (270-480)	800	1050-1200
2.1 Timing device	rev/min	Start	(4,5-6,1)	7,7-8,4 (7,4-8,7)
	mm	100	800	1300
2.2 Supply pump	rev/min	0,7-1,2 (0,5-1,4)	(4,3-5,2)	6,2-6,7 (6,0-6,9)
	kp/cm <sup>2</sup>	500		1000
Overflow delivery	rev/min	mind. 25		55-125 (40-140)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1450-1530 (1430-1550)	0	
		1490	max. 5,0	
		1400	(31,0-39,0)	
		1300	56,5-59,5 (55,5-60,5)	
		1200	60,5-62,5 (59,5-63,5)	
		900	(60,5-62,5)	
		500	57,0-61,0 (56,0-62,0)	
	Stop	1399	0	
Idle stop	Full	400-460 (380-480)	0	
		350	(6,0-14,0)	
		100	mind. 85,0	
End stop	Start	130-230		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 22 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 2,5 d

2. Edition

En

VA 3/100 H 1250 BR 152  
0 460 303 090

supersedes 4.69  
company Savim  
engine 714-30-01

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,2 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	7,7-8,7 mm		
1.2 Supply pump pressure	900	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		380-530 (350-560)	900	1050-1200
2.1 Timing device	rev/min	Start	(7,5-8,9)	11,7-12,4 (11,4-12,7)
	mm	100	900	1250
2.2 Supply pump	rev/min	0,8-1,3 (0,6-1,5)	(5,1-6,0)	6,9-7,4 (6,7-7,6)
	kp/cm <sup>2</sup>	500		1000
Overflow delivery	rev/min	mind. 25		55-125 (40-140)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440)	0	
		1300	(33,0-43,0)	
		1200	56,0-59,0 (55,0-60,0)	
		900	(52,0-54,0)	
		500	47,5-50,5 (46,5-51,5)	
	Stop	1250	0	
Idle stop	Full	340-410 (320-430)	0	
		300	(6,0-14,0)	
End stop	Start	100	mind.65,0	
		110-210		

H1

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,0 mm (s.a.BMP)</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 4,7a 5

1. Edition

En

VA 6/100 H 1700 BR 151-2  
0 460 306 134

supersedes

company

Hanomag

engine

D 162 L

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1100	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	610-760 (580-790)	1100	1470-1620
	mm	Start	(5,2-6,8)	11,7-12,4 (11,4-12,7)
2.2 Supply pump	rev/min	100	1100	1700
	kp/cm <sup>2</sup>	0,9-1,4 (0,7-1,6)	(4,5-5,4)	6,4-6,9 (6,2-7,1)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind. 25		85-125 (70-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1940 (1870-1960)	0	
		1800	(30,0-40,0)	
		1680	49,0-53,0 (48,0-54,0)	
		1000	(52,0-54,0)	
		500	48,5-52,5 (47,5-53,5)	
	Stop	1700	0	
Idle stop	Full	530-600 (510-620)	0	
		350	(10,0-18,0)	
		100	mind. 65,0	
End stop	Start	150-250		

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H3

H3

HAN 4,7 a 5

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 4,7a 4  
1. Edition

VA 6/100 H 1700 BR 151-1  
0 460 306 132

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes Hanomag  
company D 162 LS  
engine.

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1500	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min	610-760(580-790)	1100	1470-1620
	mm	Start	(5,2-6,8)	0
2.2 Supply pump	rev/min	100	1500	1700
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(4,5-5,4)	6,4-6,9(6,2-7,1)
		500		1500
Overflow delivery	rev/min	mind. 25		85-125(70-140)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1940 (1870-1960)	0	
		1800	(30,0-40,0)	
		1680	48,5-51,5 (47,5-52,5)	
		1000	(50,0-52,0)	
		500	45,0-49,0 (44,0-50,0)	
	Stop	1700	0	
Idle stop	Full	530-600 (510-620)	0	
		350	(10,0-18,0)	
	Start	100	mind.65,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 4,7 a 3

1. Edition

VA 6/100 H 1700 BR 151  
0 460 306 095

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company: Hanomag

engine: LKW D 162 L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1100	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	610-760 (580-790)	1100	1470-1620
	mm	Start	(5,2-6,8)	11,7-12,4 (11,4-12,7)
2.2 Supply pump	rev/min	100	1100	1700
	kp/cm <sup>2</sup>	0,9-1,4 (0,7-1,6)	(4,5-5,4)	6,4-6,9 (6,2-7,1)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind. 25		85-125 (70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1940 (1870-1960) 1800 1680 1000 500	0  (30,0-40,0) 49,0-53,0 (48,0-54,0) (52,0-54,0) 48,5-52,5 (47,5-53,5)	
	Stop			
Idle stop	Full	530-600 (510-620) 350	0  (10,0-18,0)	
End stop	Start	100 150-250	mind. 65,0	

Testoil-ISO 4113

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H7

H7

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 - 8^\circ$	<p>Pump</p> <p>Dimension IV= 5,0 mm (s.a.BMP 161/32)</p> <p>Dimension V= - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0f  
2. Edition

VA 6/100 H 1100 BR 150  
0 460 306 086

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 6.70  
company: Steyr  
engine: WD 610 t

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,8-6,8 mm		
1.2 Supply pump pressure	800	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	52,5-54,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	280	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1190	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	340-460 (310-490)	800	900-1060
	mm	Start	(5,5-7,1)	8,7-9,4 (8,4-9,7)
		100	800	1100
2.2 Supply pump	rev/min	1,0-1,5 (0,8-1,7)	(4,5-5,4)	5,8-6,3 (5,6-6,5)
	kp/cm <sup>2</sup>	500		1000
Overflow delivery	rev/min	mind. 25		55-125 (40-140)
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1310 (1230-1330)	0	
		1190	(25,0-35,0)	
		1050	54,5-56,5 (53,5-57,5)	
		800	(52,0-55,0)	
		500	57,5-60,5 (56,5-61,5)	
	Stop	1100	0	
Idle stop	Full	360-420 (340-440)	0	
		280	(14,0-22,0)	
End stop	Start	100	mind. 80,0	
		130-230		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 60 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 3,1c 5

1. Edition

En

VA 4/100 H 1150 BR 148  
0 460 091

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes

company:

Hanomag  
D 142 K

engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,1 mm

Testoil SO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,1-5,1 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	50,0-51,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750 (570-780)	1000	1020-1120
	mm	Start	(3,8-5,4)	4,7-5,4 (4,4-5,7)
2.2 Supply pump	rev/min	100	1000	1150
	kp/cm <sup>2</sup>	1,1-1,6 (0,9-1,8)	(4,9-5,8)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind.25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300)	0	
		1200	(32,0-42,0)	
		1130	47,5-50,5 (46,5-51,5)	
		800	(49,5-51,5)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1150	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(8,5-16,5)	
	Start	100	mind.65,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 7,0 mm (s.a.BMP)</p> <p>Dimension V = - mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3f

1. Edition

VA 3/100 H 1700 CR 73-1  
0 460 303 124

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company: Hanomag  
engine: D 132 H1-TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	3,8-4,6 mm		
1.2 Supply pump pressure	1300	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	72,0-75,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	--	-- cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	640-700(610-730)	1300	1510-1660
	mm	Start	(3,5-4,9)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	200	1300	1700
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500		1700
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1860-1930 (1840-1950)	0	
		1800	(21,0-29,0)	
		1650	73,5-75,5 (72,5-76,5)	
		1200	(71,5-75,5)	
		500	67,0-71,0 (66,0-72,0)	
	Stop	1700	0	
Idle stop	Full			
	Start	100	mind.70,0	
End stop		150-250		

H13

H13

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 60 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

En

H14

H14



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 PEU 2,0g

2. Edition

VA 4/90 H 2250 CR 165

0 460 394 011

supersedes 12.74  
company Peugeot  
engine XD 4/88

Pre-stroke setting 0 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	5,9-6,3 mm		
1.2 Supply pump pressure	2000	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	27,5-28,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2350	13,0-19,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700-900 (670-930)	2000	2300-2450
	mm	Start	(5,6-6,6)	7,8-8,5 (7,5-8,8)
2.2 Supply pump	rev/min	200	2000	2250
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(5,8-6,7)	6,6-7,1 (6,4-7,3)
Overflow delivery	rev/min	500		2250
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2550-2650 (2530-2670)	0	
		2450	max. 5,0	
		2350	(12,0-20,0)	
		2200	27,0-30,0 (26,0-31,0)	
		1000	(27,0-29,0)	
		600	22,5-26,5 (21,5-27,5)	
	Stop	2250	0	
Idle stop	Full	340-400 (320-420)	0	
		300	(13,0-21,0)	
End stop	Start	100	mind. 50,0	
		150-250		

H15

H45

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 29 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 12 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 29,1 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6,0g 3

1. Edition

En

VA 6/100 H 1150 CR 167  
0 460 306 156

supersedes

company:

Steyr

WD 610-40

engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm 0,02 (\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,1-3,9 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	59,5-60,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1240	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	400-550(370-580)	900	1030-1170
	mm	Start	(2,8-4,2)	4,2-4,9(3,9-5,2)
		200	900	1150
2.2 Supply pump	rev/min	1,5-2,0(1,3-2,2)	(4,7-5,6)	5,7-6,2(5,5-6,4)
	kp/cm <sup>2</sup>	500		1150
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1420 (1280-1440)	0	
		1300	max. 15,0	
		1240	(25,0-35,0)	
		1100	(59,1-61,0)	
		900	57,5-59,5 (56,5-60,5)	
		500	58,0-61,0 (57,0-62,0)	
	Stop	1150	0	
Idle stop	Full	320-400 (300-420)	0	
		250	(14,0-22,0)	
		100	mind.90,0	
End stop	Start	120-220		

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H17

H17

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 30 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,6 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 MAN 3,3a 1

1. Edition

En

**Testoil-ISO 4113**

VA 6/100 H 1500 CR 181-1  
0 460 306 198

super series

company **MAN**

engine **D 0216 MXUL**

Pre-stroke setting **0,5 mm ± 0,02 (± 0,04)**

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,8-3,8 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-520(370-550)	800	1200	1310-1440
	mm	Start	(2,5-4,1)	5,6-6,6(5,3-6,9)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200	800		1500
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)	(4,4-5,3)		7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1730 (1610-1750)	0	
		1600	(25,0-35,0)	
		1500-1540	Start	
		1480	58,5-61,5 (57,5-62,5)	
		900	(57,0-59,0)	
		500	47,5-52,5 (46,5-53,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(11,0-19,0)	
	Start	100	mind. 80,0	
End stop		110-210		

J9

J370

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 MAN 3,3b

3.Edition

En

Testoil-ISO 4113

VA 6/100 H 1500 CR 181-2  
0 460 306 216

supersedes 12.78

company: MAN

engine: D 0216 MXUL

Pre-stroke setting 0,5 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,7 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	59,0-60,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	29,5-35,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	500	1000	1300	1500
	mm	1,3-2,3 (1,0-2,6)	(4,4-6,0)	6,3-7,3 (6,0-7,6)	7,0-7,7 (6,7-8,0)
2.2 Supply pump	rev/min	200		1000	1500
	kp/cm <sup>2</sup>	1,7-2,2 (1,5-2,4)		5,5-6,0 (5,3-6,2)	7,1-7,6 (6,9-7,8)
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100 (40-110)			55-100 (40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1670-1730 (1650-1750)	0	
		1600	(28,5-36,5)	
		1480	57,0-60,0 (56,0-61,0)	
		1200	(58,5-60,5)	
		500	44,5-48,5 (43,5-49,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(11,0-19,0)	
	Start	100	mind. 80,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension $\bar{IV}$ 3,00 mm Dimension $\bar{V}$ 24,65 mm

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 CIT 2,1 d

5. Edition

En

2.78

VA 4/90 H 2250 CL 186  
0 460 394 031

supersedes Citroen  
company CRD 90 L  
engine

Pre-stroke setting 0 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7 mm		
1.2 Supply pump pressure	1400	4,5-5,0 kp/cm <sup>2</sup>		2,5
1.3 Full-load delivery without charge-air pressure	1500	39,5-40,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		3,0
1.4 Idle speed regulation	400	10,0-14,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1550	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets Start

2.1 Timing device	rev/min	375-525(345-555)	700	1400	1800	2050-2200
	mm	0,8-1,8(0,5-2,1)	(4,0-5,0)	6,1-7,1	(5,8-7,4)	7,0-7,7(6,7-8,0)
		200		1400		2250
2.2 Supply pump	rev/min	1,3-1,8(1,1-2,0)	(4,3-5,2)		6,7-7,2(6,5-7,4)	
	kp/cm <sup>2</sup>	500			2250	
Overflow delivery	rev/min	55-100(40-110)			55-100(40-110)	
	cm <sup>3</sup> /10 s					

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2850	< 4,0	
		2550	(8,0-16,0)	
		2400	21,0-27,0 (20,0-28,0)	
		2230	31,75-34,25 (30,75-35,25)	
		1500	(39,0-41,0)	
		600	33,0-36,5 (32,0-37,5)	
	Stop	2250	0	
Idle stop	Full	600-750 (580-770) 400	0 (8,0-16,0)	
	Start	100	mind.58,0	
End stop		150-250		

J13

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J43

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 48 \pm 8^\circ$ $\gamma$ $\delta$	<p>Pump</p> <p>Dimension IV = 1,50 mm</p> <p>Dimension V = 29,15 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 SAV 3,3c

2. Edition

En

VA 6/100 H 1500 CR 182  
0 460 306 203

supersedes **5.75**  
company: **Saviem**  
engine: **797-05**

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting **0,5 mm  $\pm$  0,02( $\pm$  0,04)**

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,8-3,8 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-520(370-550)	800	1200	1310-1440
	mm	Start	(2,5-4,1)	5,6-6,6(5,3-6,9)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200	800		1500
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)	(4,4-5,3)		7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1730 (1610-1750)	0	
		1600	(25,0-35,0)	
		1510-1540	Start	
		1480	58,5-61,5 (57,5-62,5)	
		900	(57,0-59,0)	
		500	47,5-52,5 (46,5-53,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(10,0-20,0)	
		100	mind. 80,0	
End stop		110-210		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,81

3. Edition

VA 6/10 H 1500 CR 189  
CR 189 P

0 460 306 212

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,4 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes 3.80  
company: IHC  
engine: D 358

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-6,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	13,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	500	1000	1200	1500
mm	Start				
	1,2-2,2	(0,9-2,5)	(5,0-6,4)	6,1-7,1	(5,8-7,4) 7,0-7,7 (6,7-7,9)
2.2 Supply pump	rev/min	200	1000		1500
kp/cm <sup>2</sup>	1,9-2,4	(1,7-2,6)	(5,3-6,2)		7,4-7,9 (7,2-8,1)
Overflow delivery	rev/min	500			1500
cm <sup>3</sup> /10 s	55-100	(40-110)			55-100 (40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1690-1740 (1670-1760)	0	
		1650	(25,0-35,0)	
		1500	65,5-68,5 (64,5-69,5)	
		800	(64,5-66,5)	
		500	61,5-65,5 (60,5-66,5)	
	Stop	1500	0	
Idle stop	Full	430-480 (410-500)	0	
		330	(12,0-22,0)	
		100	mind. 75,0	
End stop	Start	260-360		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 IHC 5,8q 2

1. Edition

VA 6/10 H 1500 CR 405  
CR 405 P

0 460 306 246

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,4 mm

supersedes 5.79  
company IHC  
engine D 358

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-6,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0 cm <sup>3</sup> /1000 strokes		3,0
Full load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
		500	1000	1200	1500
2.1 Timing device	rev/min	Start			
	mm	1,2-2,2(0,9-2,5) (5,0-6,4) 6,1-7,1(5,8-7,4)7,0-7,7(6,7-8,0)			
2.2 Supply pump	rev/min	200	1000		1500
	kp/cm <sup>2</sup>	1,9-2,4(1,7-2,6) (5,3-6,2)		7,4-7,9(7,2-8,1)	
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1690-1740 (1670-1760)	0	
		1650	(25,0-35,0)	
		1500	65,5-68,5 (64,5-69,5)	
		800	(64,5-66,5)	
	Stop	1500	0	
Idle stop	Full	430-480 (410-500)	0	
		330	(13,0-21,0)	
		100	mind.75,0	
End stop	Start	260-360		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = - \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8a 3

1. Edition

En

VA 6/100 H 1400 CR 19-1

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes

company

engine:

IHC

D 358

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,4 mm  $\pm$  0,04

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,0-5,8 mm		
1.2 Supply pump pressure	1000	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.84,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-380(220-410)	400	1000	1400
mm		Start	0,3-1,3(0-1,6)	(4,7-6,1)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		1000	1400
kp/cm <sup>2</sup>		2,0-2,5(1,8-2,7)		(5,6-6,5)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min	500			1400
cm <sup>3</sup> /10 s		55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1550-1620 (1530-1640) 1500 1410-1430 1350 1200 500	0  (30,0-40,0) Start 67,5-70,5 (66,5-71,5) (69,0-71,0) 59,0-63,0 (58,0-64,0)	
	Stop	1400	0	
Idle stop	Full	360-420 (340-440) 250	0  (21,0-29,0)	
End stop	Start	100 220-300	mind.84,0	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 CIT 2,6a

1. Edition

VA 4/90 H 2000 CR 406  
CR 406 P  
0 460 394 043

supersedes  
company: Citroen  
engine: CR D 93 B

Pre-stroke setting 0 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	5,3-5,7 mm		
1.2 Supply pump pressure	1400	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	44,0-45,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	7,0-11,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2200	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	1400	1800
mm	Start	1,9-1,9(0,6-2,2)	(5,0-6,0) 7,1-8,1(6,8-8,4)
2.2 Supply pump	rev/min	200	1400
kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,6-5,5)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500	2000
cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2400	max. 6,0	
		2300	(8,0-14,0) (7,0-15,0)	
		2200	(21,0-29,0)	
		2000	37,5-39,5 (36,5-40,5)	
		1200	(43,5-45,5)	
		600	39,3-42,3 (38,3-43,3)	
	Stop	2000	0	
Idle stop	Full	600-670	0	
		(580-690)		
		400	(6,0-12,0)	
		300	15,0-27,0 (14,0-28,0)	
End stop	Start	100	mind.58,0	
		110-220		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 16 \pm 4^\circ$ $\delta = \text{--}$	<p>Pump</p> <p>Dimension IV = -- mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001(4 HAN 4,7 b 2

1. Edition

VA 6/100 H 1100 CR 75-2

0 460 306 145

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes

company Hanomag

engine D 162 H 1-TMC

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	900	1,3-2,1 mm		
1 2 Supply pump pressure	900	4,3-4,8 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1180	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	580-700(550-730)	900	1000-1100
	mm	Start	(1,0-2,4)	2,6-2,3(2,3-3,6)
2 2 Supply pump	rev/min	100	900	1100
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,1-5,0)	4,8-5,3(4,6-5,5)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1270 (1190-1290) 1180 1100 1000 500	0  (25,0-35,0) 51,5-53,5 (50,4-54,5) (49,0-51,0) 44,5-47,5 (43,5-48,5)	
	Stop	1100	0	
Idle stop	Full	370-430 (350-450) 300	0  (11,0-19,0)	
	Start	100	mind.65,0	
End stop		150-250		

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K1

K1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 e

3. Edition

VA 6/100 H 1250 CR 76  
0 460 306 147

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 7.73  
company: IHC  
engine: D 358

Pre-stroke setting 0,3 mm  $\pm$  0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,8-4,8 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	67,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	350-500 (320-530)	900	1100-1250
	mm	Start	(3,5-5,1)	6,1-6,8 (5,8-7,1)
		200	900	1250
2.2 Supply pump	rev/min	1,5-2,0 (1,3-2,2)	(4,8-5,7)	6,2-6,7 (6,0-6,9)
	kp/cm <sup>2</sup>	500		1250
Overflow delivery	rev/min	55-100 (40-110)		55-100 (40-110)
	cm <sup>3</sup> /10 s			

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1450 (1370-1470)	0	
		1300	(35,0-45,0)	
		1200	64,0-67,0 (63,0-68,0)	
		800	(66,5-68,5)	
		500	64,5-67,5 (63,5-68,5)	
	Stop	1250	0	
Idle stop	Full	380-430 (360-450)		
		250	(11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-320		

K3

M3

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8e 1

1. Edition

En

VA 6/100 H 1150 CR 76 - 1  
0 460 906 179

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,04

supersedes IHC  
company: D 358  
engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,0-4,0 mm		
1.2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	475	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min	350-400(320-430)	700	900	950-1100
	mm	Start	(2,7-4,3)	4,6-5,6(4,3-5,9)	6,1-6,8(5,8-7,1)
		100	700		1150
2.2 Supply pump	rev/min	1,8-2,3(1,6-2,5)	(4,2-5,1)		6,0-6,5(5,8-6,7)
	kp/cm <sup>2</sup>	500			1150
Overflow delivery	rev/min	55-100(40-110)			55-100(40-110)
	cm <sup>3</sup> /10 s				

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340)	0	
		1200	(35,0-45,0)	
		1150-1170	Start	
		1100	68,5-71,5 (67,5-72,5)	
		800	(69,0-71,0)	
		500	66,0-69,0 (65,0-80,0)	
	Stop	1150	0	
Idle stop	Full	575-725 (555-745)	0	
		475	(11,0-19,0)	
	Start	100	mind. 90,0	
End stop		220-300		

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K5

K5

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 30 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3 g

1. Edition

En

VA 3/100 H 1100 CR 73-2  
0 460 309 120

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

supersedes -  
company: Hanomag  
engine: D 132 H1

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm$  0,02( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,5-2,3 mm		
1.2 Supply pump pressure	900	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	600-730(570-760)	900	1030-1120
	mm	Start	(1,2-2,6)	2,5-3,2(2,2-3,5)
		200	900	1100
2.2 Supply pump	rev/min	1,3-1,8(1,1-2,0)	(4,1-5,0)	4,9-5,4(4,7-5,6)
	kp/cm <sup>2</sup>	500		1100
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1220-1270 (1200-1290)	0	
		1200	(25,0-35,0)	
		1100	54,0-56,0 (53,0-57,0)	
		1000	(52,5-54,5)	
		500	49,5-52,5 (48,5-53,5)	
	Stop	1100	0	
Idle stop	Full	370-430 (350-450)	0	
		300	(11,0-19,0)	
	Start	100	mind.65,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 g

2. Edition

VA 4/100 H 1400 CR 74  
0 460 304 155

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02( $\pm$  0,04)

supersedes 5.72  
company Hanomag  
engine D 142 H-TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,1-3,9 mm		
1.2 Supply pump pressure	1200	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	620-820(590-850)	1200	1300-1410
	mm	Start	(2,8-3,2)	4,3-5,0(4,0-5,3)
		200	1200	1400
2.2 Supply pump	rev/min	1,3-1,8(1,1-2,0)	(5,2-6,1)	6,0-6,5(5,8-6,7)
	kp/cm <sup>2</sup>	500		1400
Overflow delivery	rev/min	55-100(40-110)		55-100(40-110)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1620 (1540-1640)	0	
		1500	(25,0-35,0)	
		1400	57,0-60,0 (56,0-61,0)	
		1000	(55,5-57,5)	
		500	52,0-56,0 (51,0-57,0)	
	Stop	1400	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(13,0-21,0)	
End stop	Start	100	mind.80,0	
		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1 g 1

1. Edition

En

VA 4/100 H 1700 CR 74-1

0 460 304 158

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02( $\pm$  0,04)

supersedes

company: Hanomag  
engine: D 142 H 2-TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,6-5,4 mm		
1.2 Supply pump pressure	1200	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	--	-- cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	520-670(490-700)	1200	1340-1450
	min	Start	(4,3-5,7)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	1200	1700
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(5,2-6,1)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500		1700
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850	0	
		(1760-1870)		
		1690-1710	Start	
		1650	48,0-51,0 (47,0-52,0)	
		1000	(51,0-53,0)	
		500	47,0-51,0 (46,0-52,0)	
	Stop	1700	0	
Idle stop	Full	380-450	0	
		(360-470)		
		300	(13,0-21,0)	
	Start	100	mind. 70,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 3,1 g 2  
1. Edition

VA 4/100 H 1100 CR 74 - 2

0 460 304 168

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02( $\pm$  0,04)

supersedes

company Hanomag

engine: D 141 H 1 - TMC

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,4-2,2 mm		
1.2 Supply pump pressure	900	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	56,5-57,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	6,0-14,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	650-800(620-830)	900	950-1100
	mm	Start	(1,1-2,5)	2,4-3,1(2,1-3,4)
2.2 Supply pump	rev/min	200	900	1100
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,3-5,2)	5,2-5,7(5,0-5,9)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1260-1330 (1240-1350)	0	
		1250	(5,0-7,5,0)	
		1080	56,5-59,5 (55,5-60,5)	
		900	(56,0-58,0)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1100	0	
Idle stop	Full	330-390 (310-410)	0	
		300	(6,0-14,0)	
		100	mind.70,0	
End stop	Start	150-250		

K13

K13 /

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 HAN 4,7 b

2. Edition

VA 6/100 H 1400 CR 75  
0 460 306 138

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 5.72  
company Hanomag  
engine D 162 H-TMC

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,2-4,0 mm		
1.2 Supply pump pressure	1200	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	580-700 (550-730)	1200	1260-1380
	mm	Start	(2,9-4,3)	4,3-5,0 (4,0-5,3)
2.2 Supply pump	rev/min	200	1200	1400
	kp/cm <sup>2</sup>	1,4-1,9 (1,2-2,1)	(5,1-6,0)	5,8-6,3 (5,6-6,5)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1650 (1540-1670)	0	
		1500	(30,0-40,0)	
		1400	51,5-54,5 (50,5-55,5)	
		1000	(51,0-53,0)	
		500	44,5-47,5 (43,5-48,5)	
	Stop	1400	0	
Idle stop	Full	400-480 (380-500)	0	
		300	(16,0-24,0)	
		100	mind.65,0	
End stop		150-250		

K15

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,7 b 1

1. Edition

VA 6/100 H 1700 CR 75 - 1.  
0 460 306 144

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes

company

engine

Hanomag  
D 162

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm 0,02(+0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,3-5,1 mm		
1.2 Supply pump pressure	1200	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	1200	1550-1700
	mm	Start	(4,0-5,4)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1200	1700
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,1-6,0)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1700
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1820-1920 (1800-1940)	0	
		1800	(25,0-35,0)	
		1650	49,0-52,0 (48,0-53,0)	
		1200	(52,0-54,0)	
		500	44,5-48,5 (43,5-49,5)	
	Stop	1700	0	
Idle stop	Full	400-480 (380-500)	0	
		300	(11,0-19,0)	
		100	mind.65,0	
End stop	Start	150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 OPE 2,0a

2. Edition

VA 4/90 H 2200 CL 163-3  
CL 163-3 P  
0 460 394 036

supersedes 9.77  
company Opel  
engine 2,0 Vauxhall

Pre-stroke setting 0,15 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	2100	31,0-32,0 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	-- 1000 2000 2100-2250
	mm	Start 1,2-2,2(0,9-2,5)(6,1-7,1) 7,3-7,7(7,0-8,0)
2.2 Supply pump	rev/min	200 2000 2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0) (6,8-7,7) 7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500 2200
	cm <sup>3</sup> /10 s	55-100(40-110) 55-100(40-μμ0)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-1800 (2630-2820)	0	
		2550	max. 6,0	
		2420	(8,0-16,0)	
		2100	(30,5-32,5)	
		1250	34,5-37,5 (33,5-38,5)	
		600	27,0-30,0 (26,0-31,0)	
	Stop	1100	0	
Idle stop	Full	370-450 (350-470) 350	0 (4,0-12,0)	
	Start	100	mind. 50,0	
End stop				

K19

K19

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension <math>\bar{i}\bar{v}</math> 3,6 mm</p> <p>Dimension <math>\bar{v}</math> 29,45 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 5,0 b

4. Edition

VA 6/100 H 1150 CR 160-5  
0 460 306 243

supersedes 4.80  
company Steyr  
engine WD 611.85

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,2 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,6-7,4 mm		
1.2 Supply pump pressure	1000	6,2-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	1000	1150
	mm	Start 2,5-3,5(2,2-3,8)	(6,3-7,7)	7,7-8,4(7,4-8,7)
		200	1000	1150
2.2 Supply pump	rev/min	2,0-2,5(1,8-2,7)	(6,0-6,9)	6,7-7,2(6,5-7,4)
	kp/cm <sup>2</sup>	500		1150
		55-100(40-110)		55-100(40-110)
Overflow delivery	rev/min			
	cm <sup>3</sup> /10 s			

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1430 (1360-1450) 1350 1150 1000 500	0  (15,0-25,0) (68,5-70,5) 66,8-69,2 (65,8-70,2) 60,5-64,5 (59,5-65,5)	
	Stop	1150	0	
Idle stop	Full	460-520 (440-540) 350	0  (8,0-16,0)	
	Start	100	mind. 90,0	
End stop		260-340		

K21

K21

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV 3,20 mm</p> <p>Dimension V 24,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEN 0,6a

2. Edition

VA 2/100 H 1200 CL 162  
0 460 302 006

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 7.73  
company Volvo  
engine X2

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	27,5-28,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	9,0-17,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min	400-510 (370-540)	1000	1100-1250
	mm	Start	(3,2-4,6)	4,3-5,0 (4,0-5,3)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,2-1,7 (1,0-1,9)	(4,7-5,6)	5,6-6,1 (5,4-6,3)
		500		1200
Overflow delivery	rev/min	55-100 (40-110)		55-100 (40-110)
	cm <sup>3</sup> /10 s			

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340)	0	
		1250	(8,0-18,0)	
		1150	26,5-28,5 (25,5-29,5)	
		1000	(27,0-29,0)	
		500	18,0-21,0 (17,0-22,0)	
	Stop	1200	0	
Idle stop	Full	270-320 (250-340)	0	
		250	(6,0-14,0)	
	Start	100	mind. 85,0	
End stop		150-250		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 20 \pm 4^\circ$ $\beta = 25 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV 4,5 mm</p> <p>Dimension V 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

# 46

WPP 001/4 PEN 0,6 b

2. Edition

En

VA 2/100 H 1300 CL 162-1  
0 460 302 008

supersedes 3.77  
company PENTA  
engine MO 7A

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	31,5-32,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	9,0-17,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min	400-510(570-540)	700	1000	1100-1250
	mm	Start	1,2-2,2(0,9-2,5)	(3,2-4,5)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200		1000	1300
	kp/cm <sup>2</sup>	1,2-1,7(1,0-2,9)		(4,7-5,6)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1300
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>	
End stop	Full	1370-1420 (1350-1440)	0		
		1350	(8,0-18,0)		
		1310-1330	Start		
		1280	28,5-30,5		
		1000	(27,5-31,5)		
		500	(31,0-33,0)		
			21,5-24,5	(20,5-25,5)	
	Stop	1300	0		
Idle stop	Full	270-320 (250-340)	0		
		250	(6,0-14,0)		
	Start	100	mind.85,0		
End stop		150-250			

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 30 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension $\bar{IV}$ 4,5 mm Dimension $\nabla$ 24,65 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 OPE 2,1 a 1

1. Edition

VA 4/90 H 2200 CL 163-1  
0 460 394 016

supersedes

company

engine

Opel

TL 1755 Vauxhall

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment

WDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,15 mm  $\pm$  0,02 ( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	37,5-38,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	1000	2000	2100-2250
	mm	Start	1,2-2,2(0,9-2,5)	(6,1-7,1)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200		2000	2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(6,8-7,7)	7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500			2200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-2800 (2630-2820)	0	
		2550	max. 6,0	
		2420	(8,0-16,0)	
		2230	32,0-34,5 (31,0-35,5)	
		2200	32,25-34,75 (31,25-35,75)	
		1250	(37,0-39,0)	
		600	29,5-32,5 (28,5-33,5)	
		1100	0	
Idle stop	Full	370-450 (350-470)	0	
		350	(4,0-12,0)	
	Start	100	mind. 50,0	
End stop		110-190		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 28 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension <math>\bar{IV}</math> 3,6 mm</p> <p>Dimension <math>\nabla</math> 29,45 mm</p>

**Testoil-ISO 4113**



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 OPE 2,1a

6. Edition

En

VA 4/90 H 2200 CL 163  
CL 163 P  
0 460 394 009

supersedes 9.76  
company Opel  
engine:

Pre-stroke setting 0,15 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	37,5-38,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	--	1000	2000
	mm	Start	1,2-2,2(0,9-2,5)	(6,1-7,1)
2.2 Supply pump	rev/min	200	2000	2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(6,8-7,7)	7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500		2200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-2800 (2630-2820)	0	
		2550	max. 6,0	
		2420	(8,0-16,0)	
		2230	32,0-34,5 (31,0-35,5)	
		2200	32,25-34,75 (31,25-35,75)	
		1250	(37,0-39,0)	
		600	29,5-32,5 (28,5-33,5)	
	Stop	2200	0	
Idle stop	Full	370-450 (350-470)	0	
		350	(4,0-12,0)	
		100	mind. 50,0	
End stop	Start	110-190		

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Angle to the stop plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 28 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension <math>i\bar{V}</math> 3,60 mm</p> <p>Dimension <math>\nabla</math> 29,45 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 OPE 2,1b  
2. Edition

VA 4/90 H 2200 CL 163-2  
CL 163-2 P  
0 460 394 026

supersedes 1.75  
company Opel  
engine 2,0 ltr.

Pre-stroke setting 0,15 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	2100	31,0-32,0 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min	--	1000	2000	2100-2250
	mm	Start	1,2-2,2(0,9-2,5)	(6,1-7,1)	7,3-7,7(7,0-8,0)
2.2 Supply pump	rev/min	200		2000	2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(6,8-7,7)	7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500			2200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>	
End stop	Full	2650-2800 (2630-2820)	0		
		2550	max. 6,0		
		2420			
		2100	(8,0-16,0)		
		1250	(30,5-32,5)		
		600	34,5-37,5 (33,5-38,5) 27,0-30,0 (26,0-31,0)		
	Stop	2200	0		
Idle stop	Full	370-450 (350-470)	0		
		350	(4,0-12,0)		
		100	mind. 50,0		
End stop	Start	110-190			

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 28 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<p>Pump</p> <p>Dimension <math>\underline{V}</math> 3,60 mm</p> <p>Dimension <math>\underline{V}</math> 29,45 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 6,0g 5

1. Edition

En

VA 6/100 H 1200 CR 178  
0 460 306 188

supersedes

company:

engine.

Steyr  
WD 610.41

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,0-3,8 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1180	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	270	11,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	300-450(270-480)	500	900	1050	1070-1210
		0,7-1,7(0,4-2,0)	(2,7-4,1)	3,5-4,5(3,2-4,8)		4,2-4,9(3,9-5,2)
2.2 Supply pump	rev/min	200		900		1200
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)		(4,7-5,6)		6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500				1200
	cm <sup>3</sup> /10 s	55-100(40-110)				55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1420 (1270-1450)	0	
		1280	(30,0-40,0)	
		1210-1240	Start	
		1180	(68,5-70,5)	
		900	65,0-68,0 (64,0-69,0)	
		500	63,0-66,0 (62,0-67,0)	
		1200	0	
Idle stop	Full	350-430 (330-450)	0	
		270	(10,0-20,0)	
		100	mind.90,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV 3,0 mm</p> <p>Dimension V 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 PEU 2,1e 1

1. Edition

En

VA 4/90 H 2100 CR 170-1  
0 460 394 020

supersedes

company

engine:

Peugeot  
XDD 4/90 für  
Saviem SG 1

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm  $\pm 0,02(\pm 0,04)$

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	5,8-6,2 mm		
1.2 Supply pump pressure	2000	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1400	37,5-38,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	10,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2200	17,0-23,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

		Start	1000	1600	2000	2200-2400
2.1 Timing device	rev/min					
	mm	0,7-1,7(0,4-2,0)	3,7-4,5(3,4-4,8)	5,5-6,5(5,5-6,5)	6,9-7,6(6,6-7,9)	
2.2 Supply pump	rev/min	200		2000		2100
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)		(5,4-6,3)	--	--
Overflow delivery	rev/min	500				2100
	cm <sup>3</sup> /10 s	55-100(40-110)				55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2300	max.9,0	
		2200	(16,0-24,0)	
		1050	33,75-36,25	(32,75-37,25)
		1400	(37,0-39,0)	
		850	30,25-32,75	(29,25-33,75)
		500	30,25-32,75	(29,25-33,75)
		2100	0	
	Stop			
Idle stop	Full	400-460 (380-480)	0	
		330	(9,0-15,0)	
		100	mind.70,0	
End stop	Start	150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 30 \pm 4^\circ$ $\beta = \pm 8^\circ$ $\gamma = 18 \pm 2^\circ$ $\delta = -6^\circ$	<p>Pump</p> <p>Dimension <math>\underline{W}</math> 2,0 mm</p> <p>Dimension <math>\underline{Y}</math> 25,0 mm</p>



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 CIT 2,1 b

4. Edition

En

VA 4/90 H 2250 CR 171-1  
0 460 394 018

3.77  
supersedes Citroen  
company CRD 90  
engine.

Pre-stroke setting 0 mm  $\pm 0,02(\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,8-5,2 mm		
1.2 Supply pump pressure	1400	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	2250	32,5-33,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	15,0-21,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	--	600	1400	1800	1950-2100
		0,4-1,6(0,2-1,9)	(4,5-5,5)	7,1-8,1(6,8-8,4)	8,9-9,6(8,6-9,9)	
2.2 Supply pump	rev/min	200	1400		2250	
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,3-5,2)		7,1-7,6(6,9-7,8)	
		500			2250	
Overflow delivery	rev/min	55-100(40-110)				
	cm <sup>3</sup> /10 s				55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2400	0	
		2250	(14,0-22,0)	
		1250	(32,0-34,0)	
		600	34,5-36,5 (33,5-37,5)	
			29,0-32,0 (28,0-33,0)	
	Stop	2250	0	
Idle stop	Full	310-380 (290-400)	0	
		300	(8,0-16,0)	
		100	mind.58,0	
End stop	Start	150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 12 \pm 4^\circ$ $\delta = 50 \pm 8^\circ$	<p>Pump</p> <p>Dimension <math>\bar{T}V</math> 1,6 mm</p> <p>Dimension <math>\bar{V}</math> 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 2,4a

2. Edition

VA 3/90 H 1200 CR 172  
0 460 393 007

supersedes 7.73  
company Steyr  
engine WD 308.40

Pre-stroke setting 0,3 mm  $\pm$  0,02( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	1,5-2,3 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	52,0-53,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	600	800	920-1170
	mm	Start	0,4-1,4(0,1-1,9)	(1,2-2,6)	2,4-3,1(2,1-3,4)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)		(4,7-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1420 (1340-1440)	0	
		1300	(25,0-35,0)	
		1240-1270	Start	
		1150	(51,5-53,5)	
		900	55,0-57,0 (54,0-58,0)	
		500	59,0-62,0 (58,0-63,0)	
	Stop	1200	0	
Idle stop	Full	400-450 (380-470)	0	
		300	(8,5-16,5)	
		100	mind. 70,0	
End stop		130-230		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV $\bar{=}$ 4,0 mm Dimension V $\bar{=}$ 24,6 mm

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,6d

1. Edition

VA 4/110 H 1600 CL 72  
0 460 314 020

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company: Fiat  
engine: 8040

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	6,5-7,3 mm		
1.2 Supply pump pressure	1200	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	59,0-60,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1700	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-500(370-530)	1200	1420-1550
	mm	Start	(6,2-7,6)	8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200	1200	1600
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)	(5,8-6,7)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min	500		1600
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850 (1760-1870) 1700 1600 1000 500	0  (37,0-47,0) 54,0-56,0 (53,0-57,0) (58,5-60,5) 52,0-55,0 (51,0-56,0)	
	Stop	1600	0	
Idle stop	Full	320-380 (300-400) 300	0  (11,0-19,0)	
End stop	Start	100 200-300	mind.130,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> <p>Dimension IV= - mm</p> <p>Dimension V</p>

**Testoil-ISO 4113**

En

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# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 HAN 2,3æ

2. Edition

VA 3/100 H 1400 CR 73  
0 460 303 112

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 5.72  
company: Hanomag  
engine: D 132 H

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm$  0,02( $\pm$  0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,2-4,0 mm		
1.2 Supply pump pressure	1200	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1480	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750(570-780)	1200	1280-1420
	mm	Start	(2,9-4,3)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	1200	1400
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,8-5,7)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1510-1570 (1490-1590)	0	
		1480	(30,0-40,0)	
		1380	56,5-59,5 (55,5-60,5)	
		1000	(53,5-55,5)	
		500	49,5-52,5 (48,5-53,5)	
		1400	0	
Idle stop	Full	380-450 (380-470)	0	
		300	(11,0-19,0)	
		100	mind.75,0	
End stop	Start	150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> $\bar{u} = 3,5 \text{ mm}$ $\bar{v} = 24,6 \text{ mm}$

**Testoil-ISO 4113**

En

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L22